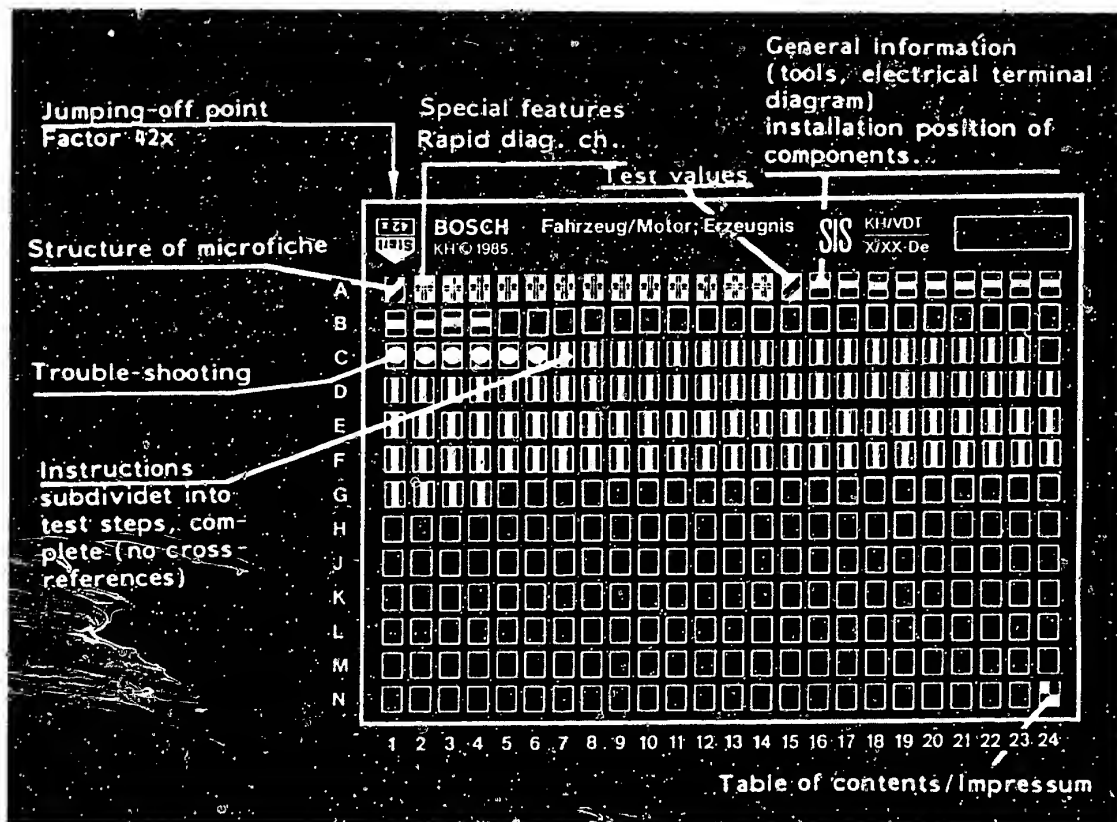


Structure of microfiche



1. Read from left to right
2. Title of microfiche (appears on each coordinate)

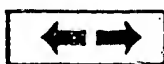
E16	Product/component/test step
	Vehicle/engine

Coordinate

3. Limits of section



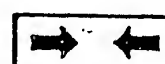
Beginning



Mid-section



End



One-page section

4. References to relevant test steps in test specifications; coordinate e.g. C6

C6

A1

Trouble-shooting program



1. Special features:

With these instructions it is possible to test Mercedes-Benz passenger cars of type W 124 equipped with electronic automatic air conditioner with blower control which is installed as an optional extra.

2. Rapid diagnosis chart for universal test adapter

The following rapid diagnosis chart makes it possible for the experienced expert to quickly check the system with the universal test adapter in conjunction with adapter lead KDHK 0010.

The contents of this chart are limited to the following:

- Sequence of test steps
- Switch positions on universal test adapter
- Test instructions
- References to coordinates of the respective detailed testing and trouble-shooting program.

If detailed instructions and information are required, always proceed according to the trouble-shooting program starting on Coordinate B 1.

Test conditions

- Check customer complaints (check operation of automatic air conditioner according to vehicle owner manual)
- Coolant level O.K.
- Refrigerant level O.K.
- Electrical system (fuses, battery voltage) O.K.
- Temperature selector thumbwheel in center position (22°)
- No button on control panel pressed
- Auxiliary heater, if installed, "off"

The ignition must be off when disconnecting plug-in connections.



Rapid diagnosis chart for universal test adapter (ETT 008.01) with adapter lead KDHK 0010

Test step	Switch position V	Ω	Remarks	Test specifications (reading)	Coordinates
1	↓	1	Resistance measurement Coolant temperature sensor	120...30 Ω at approx. +20°...+85° C at coolant temperature sensor	C 12
2	↓	2	Resistance measurement Passenger-compartment temperature sensor	approx. 16...6.4 k Ω at approx. +15°...+35°C at passenger-comp. temp. sens.	C 14
3	↓	2	Spray refrigerant spray into passenger-compartment temperature sensor.	Resistance must increase during cooling.	C 16
4	↓	5	Resistance measurement Evaporator temperature sensor	approx. 20...6.5 k Ω at approx. +10°...+35°C at temperature sensor	C 18
5	↓	9	Resistance measurement Blow-in temperature sensor	approx. 16...6.4 k Ω at approx. +15°C...+35°C at temperature sensor	C 20
6	↓	10	Resistance measurement Outside temperature sensor	approx. 7...2.7 k Ω at approx. +5°...+25°C at outside temperature sensor	C 22
Jump sockets 1 and 2 on universal test adapter; connect control unit					
7	1	10	Voltage at coolant temperature sensor Switch on ignition	approx. 6.5...2.0 V at approx. +20°...+90°C at coolant temperature sensor	D 1
8	2	10	Voltage at passenger-compartment temperature sensor	approx. 3...2 V at approx. +15°...+35°C at temperature sensor	D 3
8.1	2	10	Air admission to passenger-compartment temperature sensor Hold paper strip in front of opening of passenger-compartment temperature sensor	Paper strip is pulled in	D 5
9	3	10	Electronic control unit supply voltage	>10 V	D 7

A3

Rapid diagnosis chart
Mercedes Benz W 124



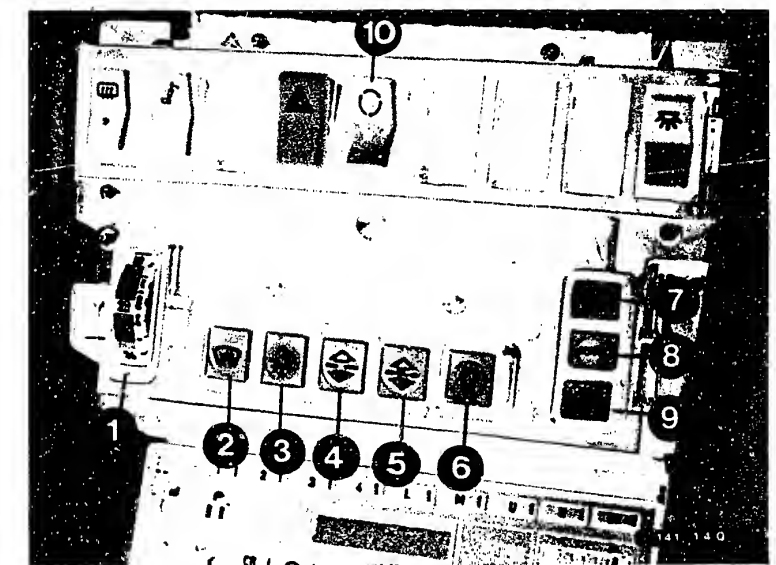
A4

Rapid diagnosis chart
Mercedes Benz W 124



Rapid diagnosis chart for universal test adapter (continued)

Test step	Switch position V Ω	Remarks	Test specifications (reading)	Coordinates
10	4 10	Auxiliary heater Auxiliary heater switch on Wait for adaptation time	> 10 V	D 9
10	5 10	Heating assistance (only as special equipment on diesel vehicles) Coolant temperature < 50°C Temperature selector thumbwheel latched in "max" position	> 10 V	D 11
		Press button T5 on universal test adapter	< 2 V	
12	8 10	Voltage at outside temperature sensor	approx. 2.5...3.6 V at approx. +25...+5°C at temperature sensor	D 13
13	9 10	Voltage at blow-in temperature sensor	approx. 1.4...3.0 V at approx. +35... +16°C at temperature Sensor	D 15
13.1	9 10	Take apart jumper between sockets 1 and 2 on universal test adapter. Start engine; engine running and at normal operating temperature. Press "max" blower button	Reading must drop	D 17
14	10 10	Re-establish jumper between sockets 1 and 2 on universal test adapter. Voltage at evaporator temperature sensor	approx. 2...3 V at approx. +35...+10°C at temperature sensor	D 19
14.1	10 10	Press button "AC" on control panel. Temperature selector thumbwheel latched in "min" position	Reading must rise	D 21



- 1 = Temperature selector thumbwheel
- 2 = Button "DEF"
- 3 = Button "BI-LEV"
- 4 = Button "AC"
- 5 = Button "EC"
- 6 = Button "O"
- 7 = "Max" blower speed button
- 8 = "AUTO" blower speed button
- 9 = "Min" blower speed button
- 10 = Fresh/recirculated air switch

A5

Rapid diagnosis chart
Mercedes Benz W 124



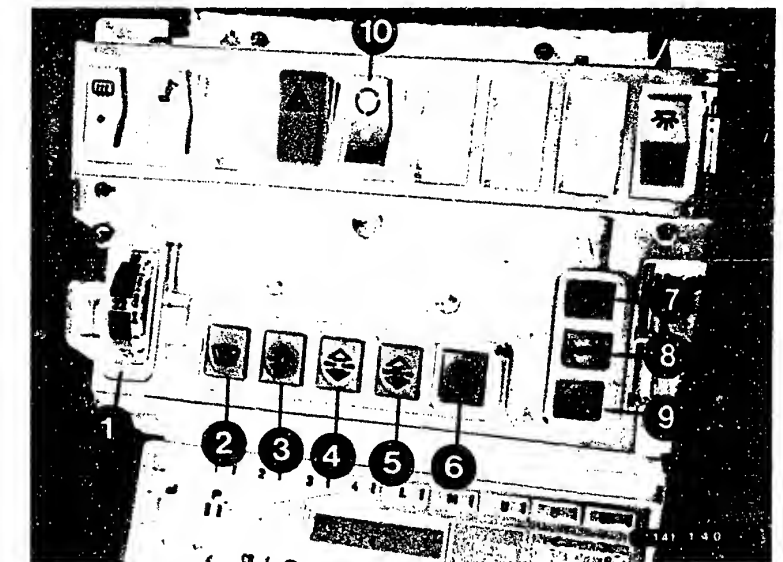
A6

Rapid diagnosis chart
Mercedes Benz W 124



Rapid diagnosis chart for universal test adapter (continued)

Test step	Switch position		Remarks	Test specifications (reading)	Coordi
	V	Ω			nates
15	12	10	Speed signal Slowly move vehicle	Reading fluctuates between 0 and 12 V	D 23
16	13	10	Energization of fresh/recirculated air valve Press button "EC" on control panel	> 10 V	E 1
			Set fresh/recirculated air switch to recirculated-air position (LED lit)	< 2 V	
17	14	10	Energization of fresh/recirculated-air valve	< 2 V	E 3
			Press button "DEF" on control panel	> 10 V	
18	15	10	Energization of center nozzle valve	> 10 V	E 5
			Turn temperature selector thumbwheel to latch in "min" position. Press button "AC" on control panel	< 2 V	
19	16	10	Energization of footwell nozzle valve	> 10 V	E 7
			Press button "BI-LEV" on control panel	< 2 V	
20	17	10	Energization of skimming flap valve: Press button T6 on universal test adapter (simulation of high outside temperature)	< 2 V	E 9
			Press button "DEF" on control panel	> 10 V	



- 1 = Temperature selector thumbwheel
- 2 = Button "DEF"
- 3 = Button "BI-LEV"
- 4 = Button "AC"
- 5 = Button "EC"
- 6 = Button "O"
- 7 = "Max" blower speed button
- 8 = "AUTO" blower speed button
- 9 = "Min" blower speed button
- 10 = Fresh/recirculated air switch

A7

Rapid diagnosis chart
Mercedes Benz W 124



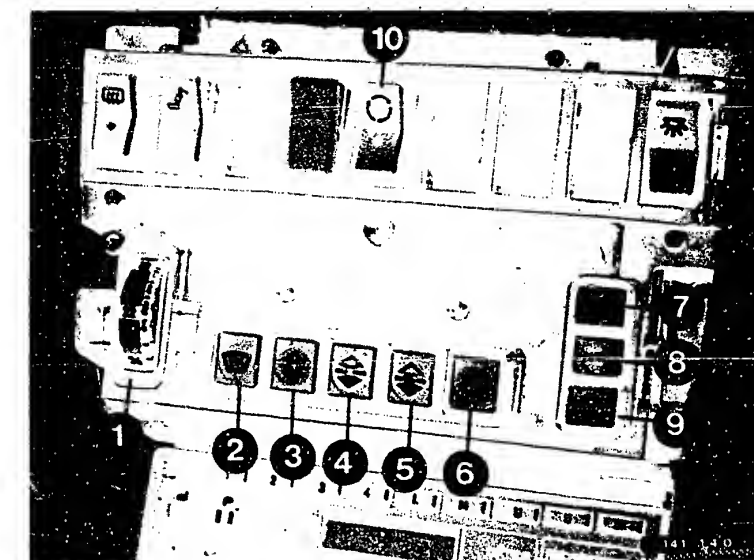
A8

Rapid diagnosis chart
Mercedes Benz W 124



Rapid diagnosis chart for universal test adapter (continued)

Test step	Switch position V Ω		Remarks	Test specifications (reading)	Coordinates
21	18	10	Energization of defroster nozzle valve	> 10 V	E 11
			Press button "AC" on control panel	< 2 V	
22	19	10	Energization of compressor clutch: Press button "EC" on control panel	> 10 V	E 13
			Press button "AC" on control panel	< 2 V	
22.1	19	10	Press button T1 on universal test adapter (simulation of icing protection)	> 10 V Refrigerant compressor must switch off	E 15
22.2	19	10	Press button T4 on universal test adapter (simulation of engine temperature > 120°C) emergency switch-off of refrigerant compressor	> 10 V	E 17
23	20	10	Energization of defroster nozzle valve: Press button "DEF" on control panel	> 10 V	E 19
			Press button "AC" on control panel	< 2 V	
24	21	10	Energization of heating water pump: Turn temperature selector thumbwheel before "max" position latched (wait for adaptation time"	< 2 V Check by feeling that heating water pump is operating	E 21



- 1 = Temperature selector thumbwheel
- 2 = Button "DEF"
- 3 = Button "BI-LEV"
- 4 = Button "AC"
- 5 = Button "EC"
- 6 = Button "O"
- 7 = "Max" blower speed button
- 8 = "AUTO" blower speed button
- 9 = "Min" blower speed button
- 10 = Fresh/recirculated air switch

A9

Rapid diagnosis chart

Mercedes Benz W 124



A10

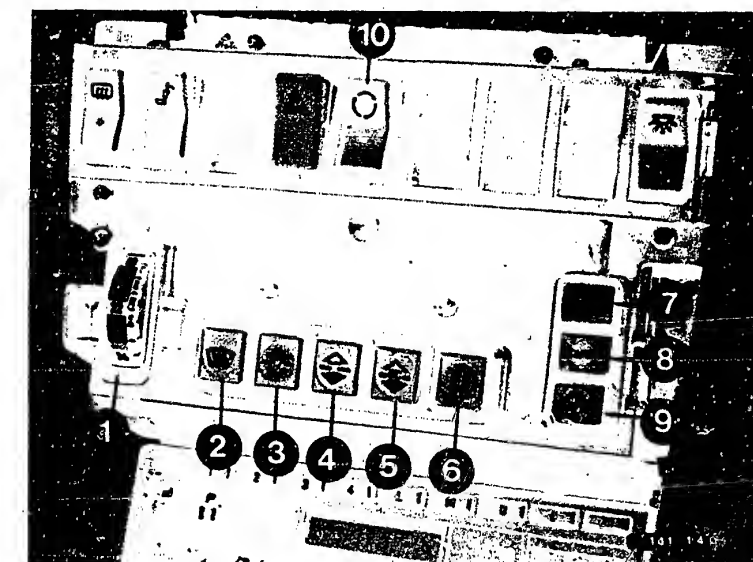
Rapid diagnosis chart

Mercedes Benz W 124



Rapid diagnosis chart for universal test adapter (continued)

Test step	Switch position V Ω	Remarks	Test specifications (reading)	Coordinates
24.1	21 10	Turn temperature selector thumbwheel to "min" latched position	> 10 V Check by feeling that heating water pump is not operating	E 23
25	22 10	Energization of heating water valve: Press button "EC" on control panel	< 2 V Check by feeling that there is no heating effect	F 1
25.1	22 10	Turn temperature selector thumbwheel to "max" latched position (wait for adaptation time)	> 10 V Check by feeling that there is a heating effect	F 3
25.2	22 10	Take apart jumper between sockets 1 and 2 on universal test adapter. Connect ammeter between sockets 1 and 2. Turn temperature selector thumbwheel to "min" latched position.	< 1 A	F 5
26	23 10	Re-establish jumper between sockets 1 and 2 on universal test adapter. Temperature selector thumbwheel in center position (22°C). Press "AUTO" blower button on control panel (wait for adaptation time).	1.4...4.5 V dependent on passenger-compartment and outside temperatures	F 7
26.1	23 10	Press "max" blower button on control panel	≥ 6 V	F 11



- 1 = Temperature selector thumbwheel
- 2 = Button "DEF"
- 3 = Button "BI-LEV"
- 4 = Button "AC"
- 5 = Button "EC"
- 6 = Button "O"
- 7 = "Max" blower speed button
- 8 = "AUTO" blower speed button
- 9 = "Min" blower speed button
- 10 = Fresh/recirculated air switch

A11

Rapid diagnosis chart

Mercedes Benz W 124



A12

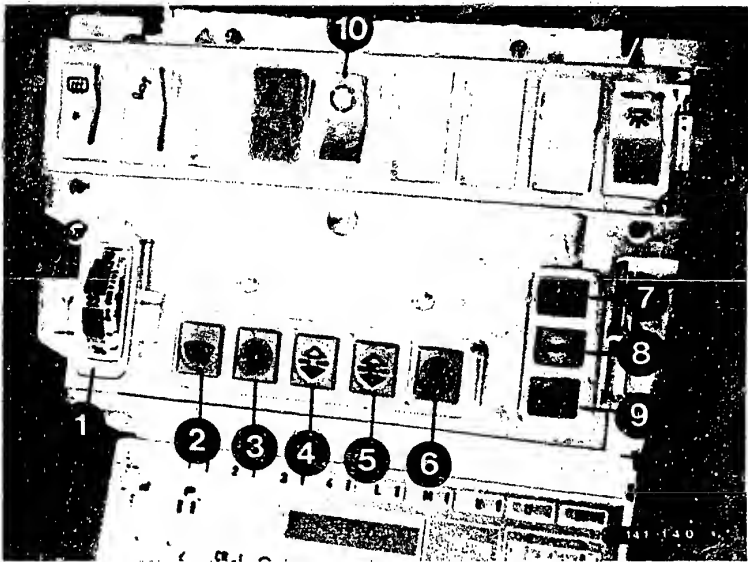
Rapid diagnosis chart

Mercedes Benz W 124



Rapid diagnosis chart for universal test adapter (continued)

Test step	Switch position		Remarks	Test specifications (reading)	Coordinates
	V	Ω			
26.2	23	10	Press "min" blower button on control panel	0.9...1.1 V	F 15
26.3	23	10	Temperature selector thumbwheel before latched position "min". Drive vehicle on dynamometer	Reading must drop (approx. 0.3 V/100 km/h)	F 19
26.4	23	10	Press button "0" on control panel	approx. 0 V	F 21



- 1 = Temperature selector thumbwheel
- 2 = Button "DEF"
- 3 = Button "BI-LEV"
- 4 = Button "AC"
- 5 = Button "EC"
- 6 = Button "0"
- 7 = "Max" blower speed button
- 8 = "AUTO" blower speed button
- 9 = "Min" blower speed button
- 10 = Fresh/recirculated air switch

3. Test specifications

Resistance of passenger-
compartment temperature sensor at +15...35°C

15...6 k Ω

C14

Resistance of blow-in
temperature sensor

15...6 k Ω
at +15...30°C

C20

Resistance of evaporator
temperature sensor

20...6 k Ω
at +10...35°C

C18

Resistance of outside
temperature sensor

7...2.7 k Ω
at +5...25°C

C22

Voltage at coolant
temperature sensor

6.5...2.0 V
at +20...90°C

D1

Resistance of change-
over valves

approx. 50...80 Ω

E1



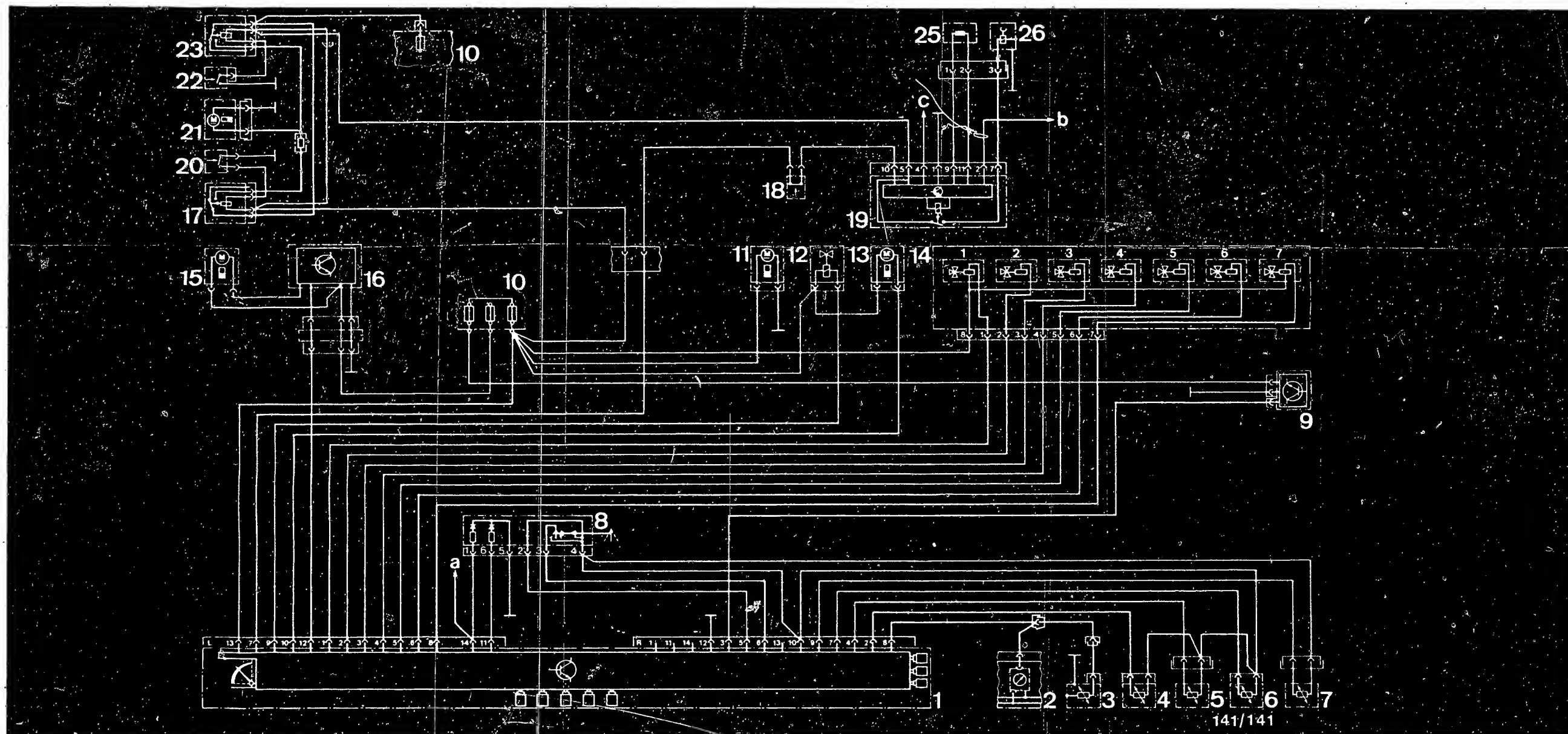
E12

A15

Test specifications

Mercedes Benz W 124





15 = Blower motor
 16 = Blower controller
 17 = Series resistor auxiliary fan relay
 18 = Refrigerant compressor pressure switch
 off 2.0 bar/on 20 bar

19 = Compressor cutoff control unit
 20 = Auxiliary fan pressure switch
 off 15 bar/on 20 bar
 21 = Auxiliary fan

22 = Thermo-switch 110°C
 23 = Auxiliary fan relay
 24 = Auxiliary fan series resistor
 25 = Refrigerant compressor engine-speed sensor
 26 = Refrigerant compressor magnetic clutch

Basic circuit diagram of automatic air conditioner in W 124 (continued)

A18

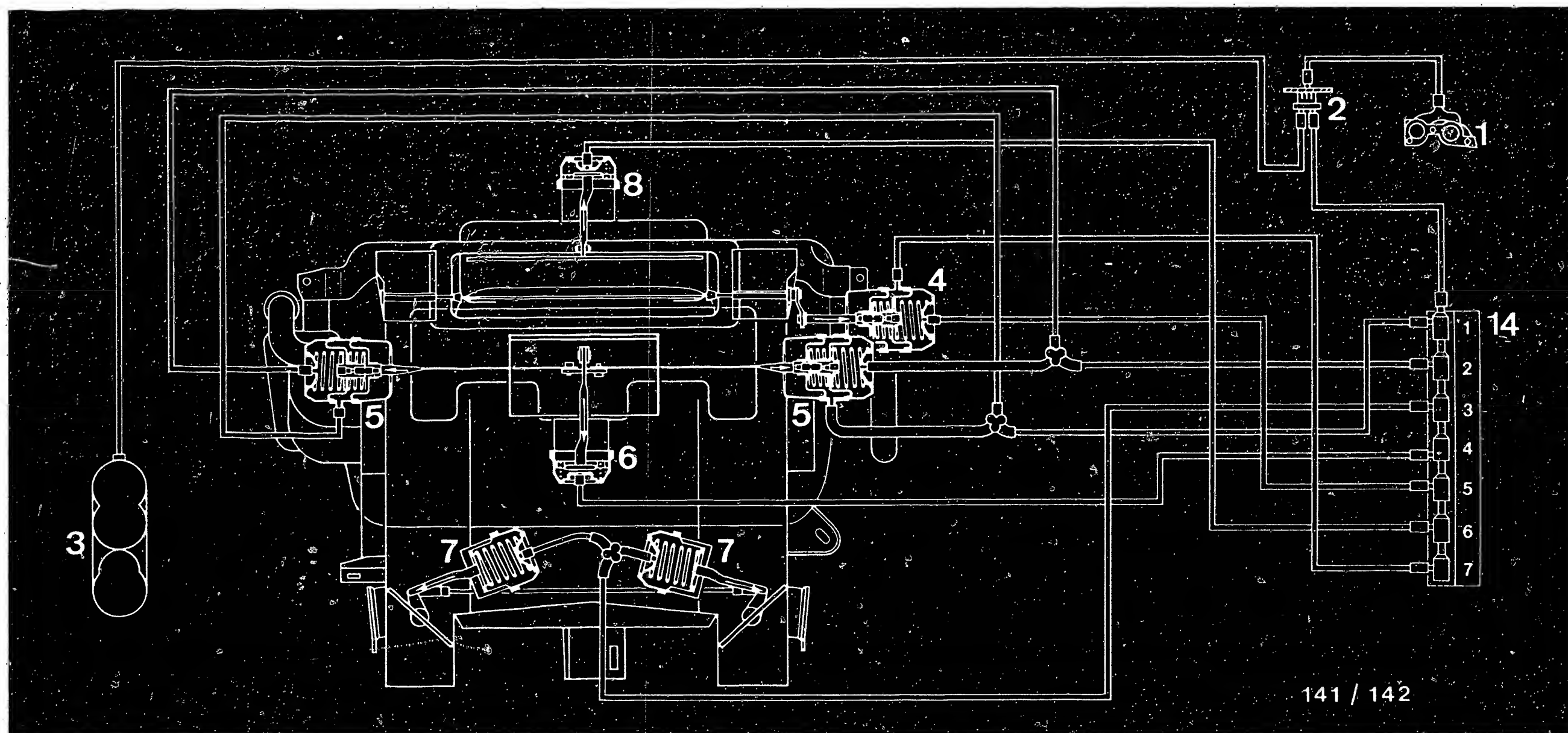
Basic circuit diagram
Mercedes Benz W 124



A19

Basic circuit diagram
Mercedes Benz W 124





- 1 = Vacuum connection on intake manifold
- 2 = Non-return valve
- 3 = Vacuum supply tank (except on diesel vehicles)
- 4 = Defroster nozzle flap vacuum element
- 5 = Fresh/recirculated air flap vacuum element
- 6 = Center nozzle flap vacuum element

- 7 = Footwell flap vacuum element
- 8 = Skimming flap vacuum element
- 14 = Change-over valve strip
- 14.1 = Fresh/recirculated air flap (small stroke)
- 14.2 = Fresh/recirculated air flap (large stroke)
- 14.3 = Footwell flap change-over valve
- 14.4 = Center nozzle flap change-over valve

- 14.5 = Defroster nozzle flap change-over valve (large stroke)
- 14.6 = Skimming flap change-over valve
- 14.7 = Defroster nozzle flap change-over valve (small stroke)

5. Vacuum diagram for W 124

A20

Vacuum diagram

Mercedes Benz W 124



A21

Vacuum diagram

Mercedes Benz W 124



6. Test equipment and tools

Description	Designation	Part No.
Universal test adapter	ETT 018.01	0 684 101 801
Adapter lead	KDHK 0010	
Electrics tester or multimeter	ETT 014.00 e.g. Pontavi	0 684 101 400 Commercially available
Refrigerant spray		Commercial available
Extractor hook for instrument cluster	Mercedes Benz	126 589 033 300
Thermal conduction paste		5 942 860 003
Vacuum pump	E.g. Mityvac	Obtainable from: Fa. Korinth Ludwig-Kloos-Str. 21 6450 Hanau 7 - Steinheim

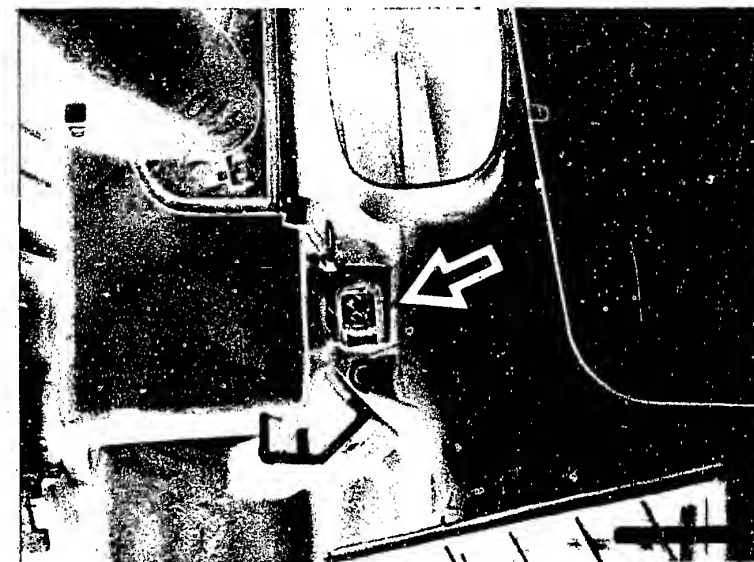
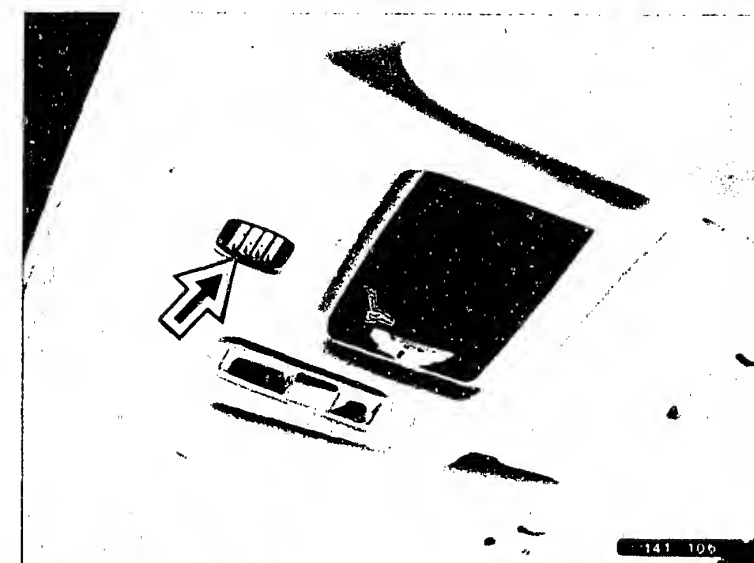
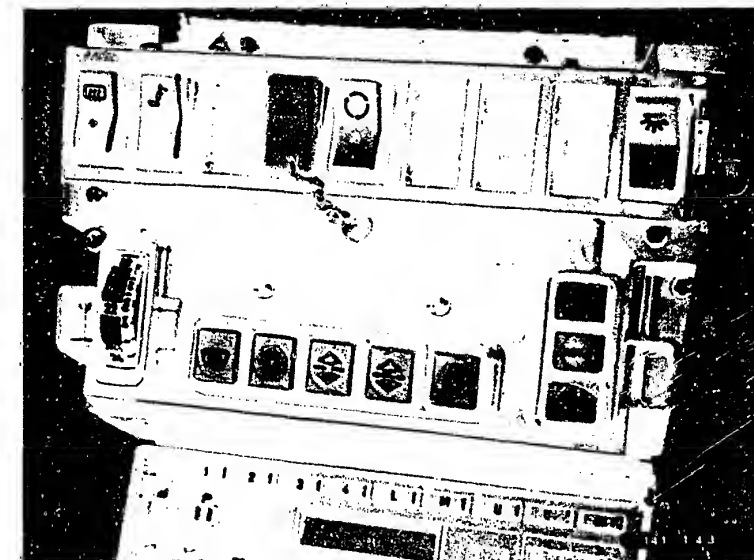


7. Installation position of components

The control panel with built-in control unit of the Mercedes-Benz automatic air conditioner is installed in the center of the instrument panel (see top picture). Trim already removed in picture. To connect the adapter lead, it is necessary to remove the control panel.

The passenger-compartment temperature sensor is mounted in the roof above the inside mirror (see center picture).

The evaporator temperature sensor is in the air flow, behind the evaporator (see bottom picture). To remove and install, unclip sensor from evaporator.



A23

Installation position of components
Mercedes Benz W 124



A24

Installation position of components
Mercedes Benz W 124



Installation position of components (continued)

The heating water valve is in the so-called equipment space on the right-hand side as viewed in the forward direction of travel (see top picture, arrow).

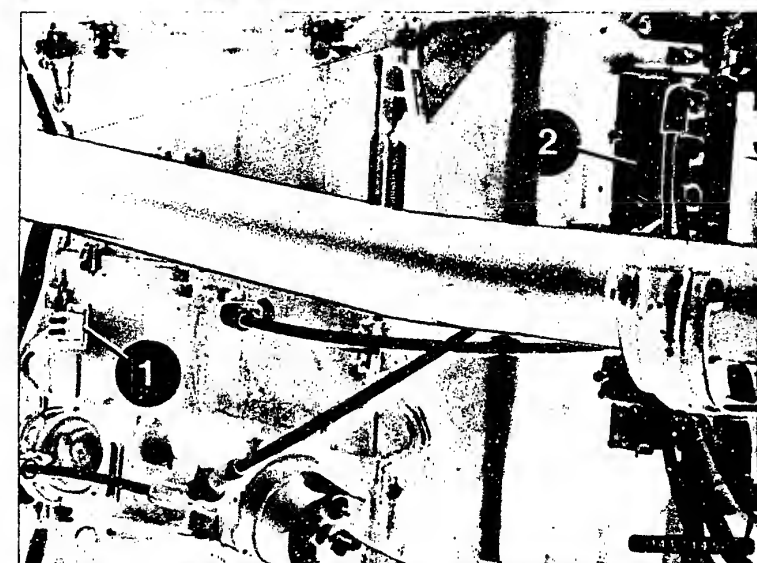
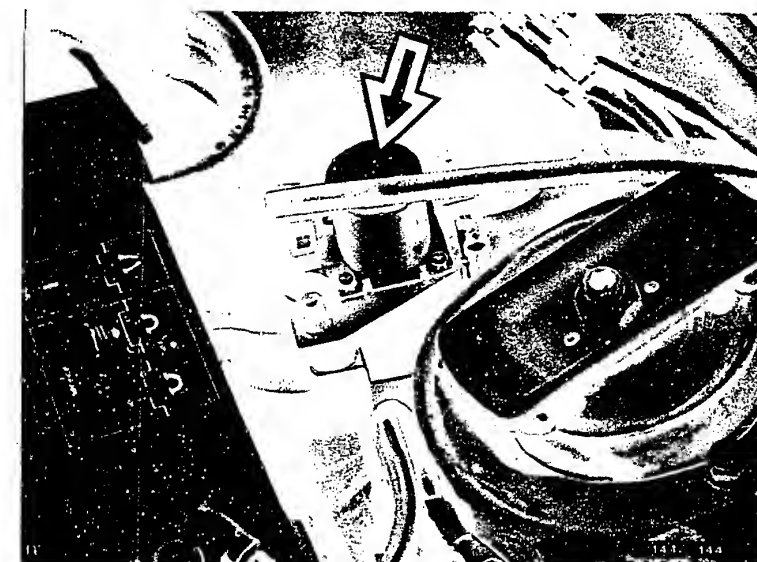
The blow-in temperature sensor (see center picture, item 1) is clipped into the heater box.

Note: The blow-in temperature sensor is accessible only after removing the center console cover (ashtray, switches and radio must be removed).

Change-over valve strip and vacuum elements are situated on the right on the heater box, see center picture, item 2).

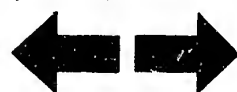
Note: Valve strip (not a Bosch part) is replaceable as a complete unit only.

The heating water pump is mounted on the right-hand firewall (see bottom picture).



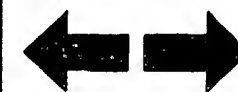
B1

Installation position of components
Mercedes Benz W 124

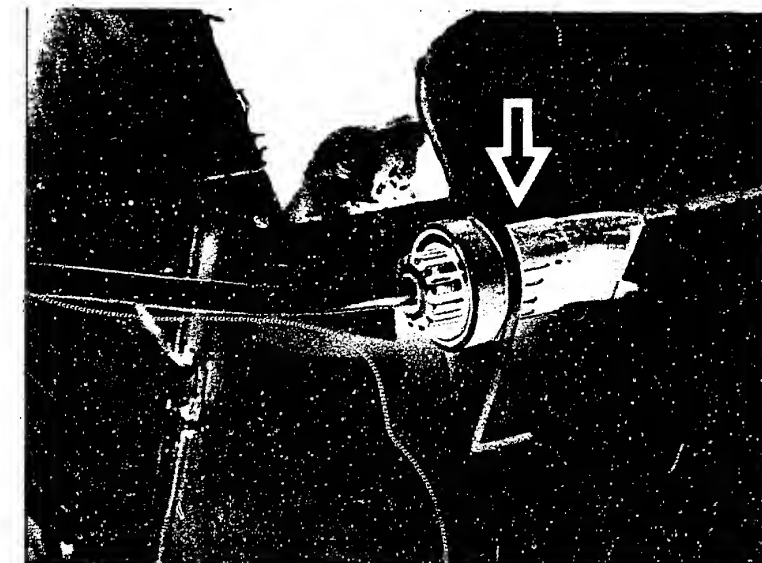


B2

Installation position of components
Mercedes Benz W 124



The outside temperature sensor is mounted on the blower box (see top picture).

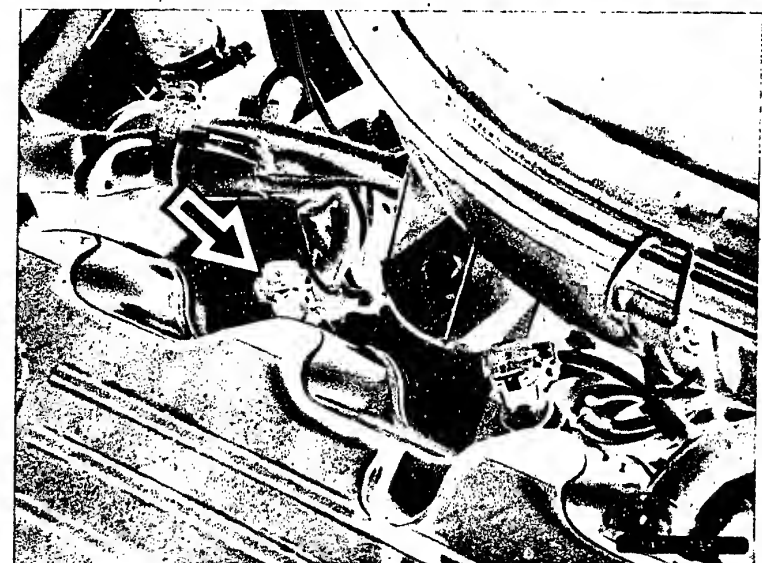


The blower controller is installed in the air duct of the blower box, behind blower motor (see center picture, arrow). It is accessible after removing the blower motor. To replace the blower controller, unscrew it from the heat sink. Before installing a new blower controller, first of all coat the seating surface with thermal conduction paste.

Note: Thermal conduction paste is poisonous. Wash hands after applying.



The coolant temperature sensor (see bottom picture, arrow) is installed in the intake manifold.



B3

Installation position of components
Mercedes Benz W 124



B4

Installation position of components
Mercedes Benz W 124



8. TROUBLE-SHOOTING

The following trouble-shooting program starts with the trouble-shooting chart (C3...C6) in which reference is made to the corresponding possible causes for each fault symptom (customer complaint).

In each cause column, reference is made to the first coordinate of the test step in which the testing of this function is described in detail.

The trouble-shooting program has been constructed in such a way that direct trouble-shooting can be performed according to the trouble-shooting chart (C3...C6).

Customer complaint (fault symptom)

- | | | | | | | Cause of trouble | Test instructions | Coordinates |
|---|---|---|---|---|---|--|-----------------------------------|---------------------|
| ● | ● | ● | ● | ● | ● | Unclear | Perform detailed trouble-shooting | C 7 |
| ● | | | | | | Low coolant level | Top off coolant | --- |
| ● | | | | | | Mono heating water valve defective | --- | F 1 |
| ● | | | | | | Auxiliary heating water pump defective | --- | E 21 |
| | ● | | | | | Evaporator sensor defective | --- | C18, D19 |
| ● | | | | | | Passenger-compartment temp. sensor defective | --- | C14, D 3 |
| | ● | | | | | Low refrigerant level | Top off refrigerant | --- |
| | ● | | | | | Refrigerant compressor does not switch on | --- | E13,E15,E17 |
| | | ● | | | | Blower controller defective | --- | F 7,F11,F15,
F19 |
| | | ● | | | | Blower motor defective | --- | F 7,F11,F15,
F19 |

Trouble-shooting chart (continued)

Customer complaint (fault symptom)

1. No heating output or heating output poor								
2. No refrigerating output or refrigerating output poor								
3. Poor performance of heating blower								
4. Heating blower does not cut back at high speed								
5. Incorrect air distribution								
6. Recirculating-air mode not possible								
						<u>Cause of trouble</u>	<u>Test instructions</u>	<u>Coordinates</u>
		●				Blower controller; control unit defective	---	F 7,F11,F15 F19
			●			Speedometer signal generator defective	---	D 23
●						Exchanger sensor defective	---	C20,D15
●						Coolant temperature sensor or coolant temperature gauge defective	---	C12,D 1
				●		Valve strip defective	---	E19,F24
					●	Fresh/recirculated air switch defective	---	E1,E3,F24
					●	Fresh/recirculated air valve defective	---	E1,E3,F24
●	●			●	●	Vacuum system for flap control leaking	---	F 24

C5

Trouble-shooting chart
Mercedes Benz W 124



C6

Trouble-shooting chart
Mercedes Benz W 124



8.2 Trouble-shooting according to test steps

8.2.1 Conditions

- Check customer complaints
(check operation of automatic air conditioner according to vehicle owner manual)
- Coolant level O.K.
- Refrigerant level O.K.
- Engine running and at normal operating temperature
- Electrical system (fuses, battery voltage) O.K.
- Temperature selector thumbwheel in center position (22°C)
- No button on control panel pressed
- Auxiliary heater off

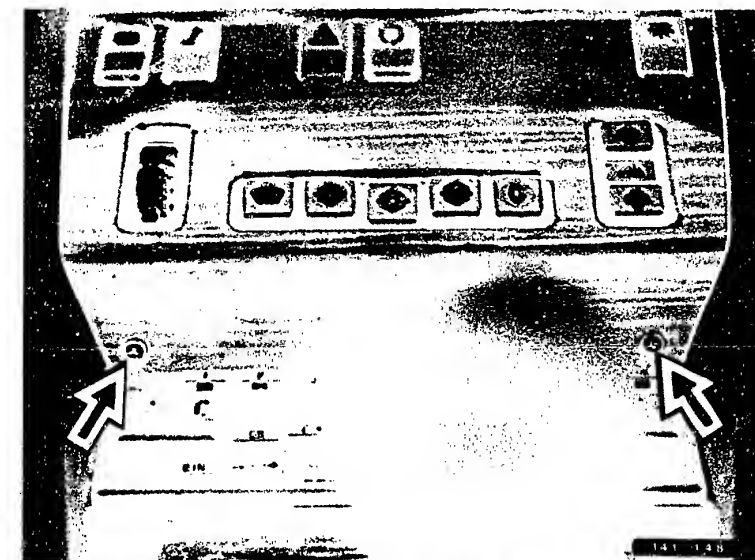
For the detailed trouble-shooting starting on Coordinate C12, go through the test steps one after the other.

Only if a fault is indicated, continue with the trouble-shooting in the right-hand column.

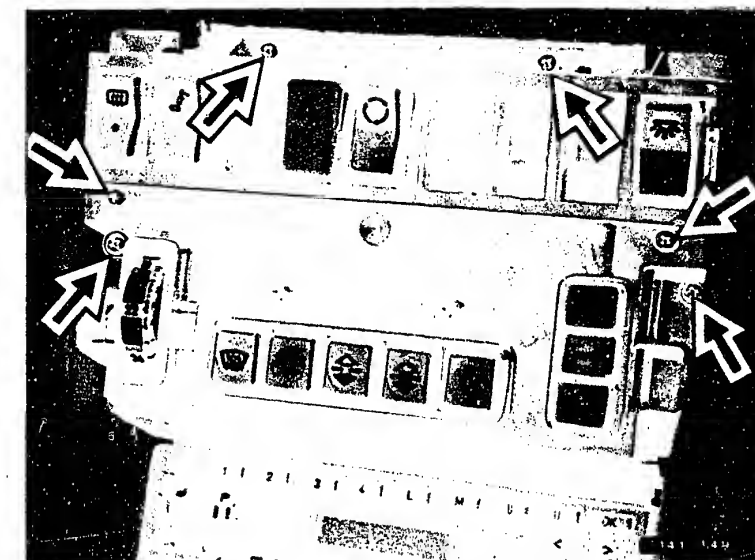


8.2.2 Preparations for testing with universal test adapter

Switch off ignition. Remove control panel with built-in control unit from center console. To do this, unscrew trim panel fastening screws (see top picture, arrows) and take off trim panel.



Unscrew fastening screws of control panel with built-in control unit (see center picture, arrows).

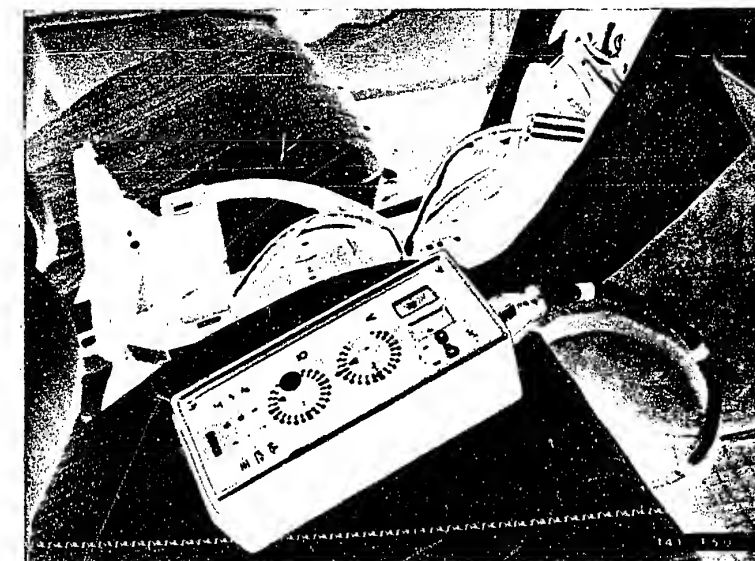


Connect universal test adapter with adapter lead (see bottom picture).

Note:

Perform trouble-shooting using the test chart.

If the connection between control unit plug and test adapter or between test adapter and control unit is disconnected, always switch off the ignition beforehand.



C8

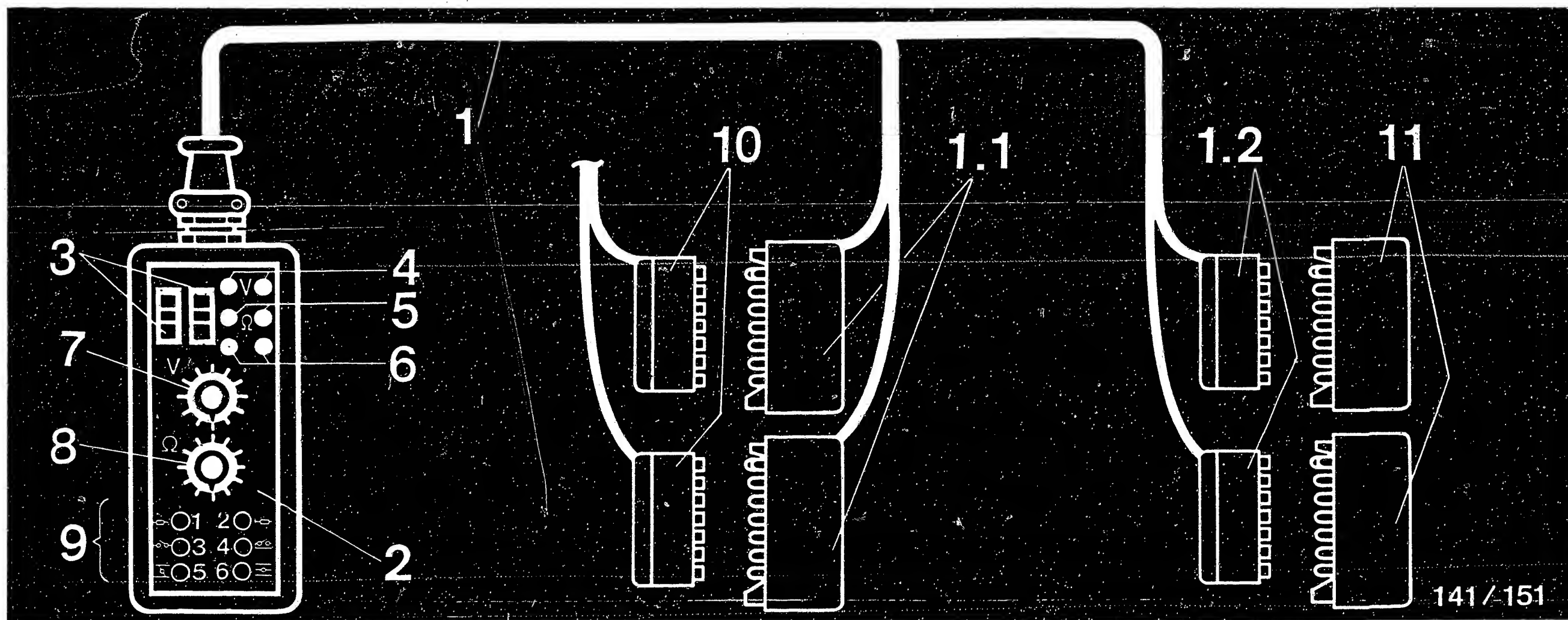
Trouble-shooting
Mercedes Benz W 124



C9

Trouble-shooting
Mercedes Benz W 124





- 1 = Adapter lead KDHK 0010
- 1.1 = Connection to wiring harness
- 1.2 = Connection to control unit
- 2 = Universal test adapter (part No.: 0 684 101 801)
- 3 = Test wells (for motortester)
- 4 = Test sockets (for voltage measurements)
- 5 = Test sockets (for resistance measurement)

- 6 = Sockets (must be jumped for testing automatic air conditioner)
- 7 = "V" program switch
- 8 = "Ω" program switch
- 9 = Button panel for simulation of operating conditions
- Button 1 = Evaporator temperature sensor cold (<5°C)

- Button 4 = Coolant temperature sensor hot (>120°C)
- Button 5 = Outside temperature sensor cold
- Button 6 = Outside temperature sensor hot
- 10 = Automatic air conditioner wiring harness
- 11 = Control unit

Universal test adapter with adapter lead for automatic air conditioner



Test step 1: Switch off ignition; disconnect control unit plug from automatic air conditioner control unit and connect to adapter lead. Jump sockets 1 and 2 on universal test adapter.

Operation:

Program switch "V"

Program switch "Ω"

Component

Coolant temperature sensor and coolant temperature gauge

Measuring equipment:

Multimeter (Ω range)

Measuring range: 2 kΩ

Connection: Blue test sockets

Test specification (reading):

120...30 Ω at
approx. 20...85°C at
temperature sensor

Reading within tolerance?

Position:



1

No

Malfunction: Resistance reading

< 10 Ω or > 150 Ω

Trouble-shooting:

Check the following leads for continuity with ohmmeter:

(Specification approx. 0 Ω)

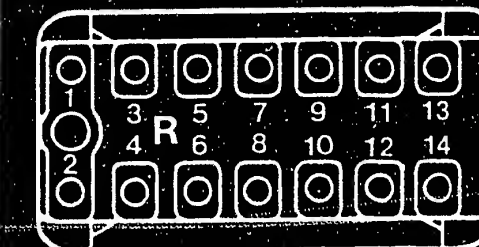
- From control unit plug (1a) socket 8 to plug of coolant temperature sensor
- From control unit plug (1a) socket 8 to plug of coolant temperature gauge socket 2
- From control unit plug (1a) socket 10 to battery term. 31 (ground).

Fault rectification:

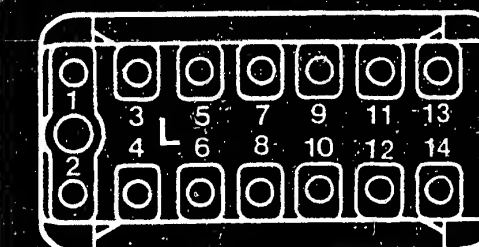
Eliminate contact resistances/open circuits on leads.

Yes

Continued on next picture page



1a

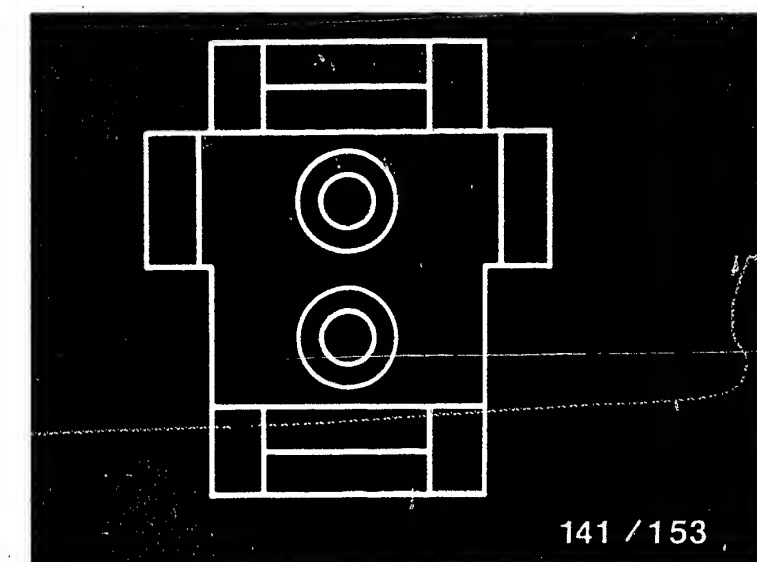


1b

141/152

1a = Control unit plug, right
1b = Control unit plug, left

Plug of coolant temperature sensor



141 / 153

C12

Trouble-shooting

Mercedes Benz W 124



C13

Trouble-shooting

Mercedes Benz W 124



Test step 2:

Operation:

Program switch "V"

Program switch "Ω"

Component:

Passenger-compartment temperature sensor

Measuring equipment:

Multimeter (Ω range)

Measuring range: 20 kΩ

Connection: Blue test sockets

Test specification (reading):

Approx. 16...8 kΩ at

approx. 15...30°C at

temperature sensor (dependent on temperature)

Test specification within tolerance?

Position



2

No

Malfunction: Resistance reading not within tolerance.

Trouble-shooting:

Check the following leads for continuity with ohmmeter:

(Specification approx. 0 Ω)

- From control unit plug (1a) socket 2 to plug of passenger-compartment temperature sensor (10a)
- From control unit plug (1a) socket 10 to plug of passenger-compartment temperature sensor (10a)

On control unit plug (1a) check socket 2 to socket 10:

Reading should be: ∞Ω

(Plug of passenger-compartment temperature sensor disconnected).

Check resistance of passenger-compartment temperature sensor directly between the pins of the temperature sensor:

Reading should be:

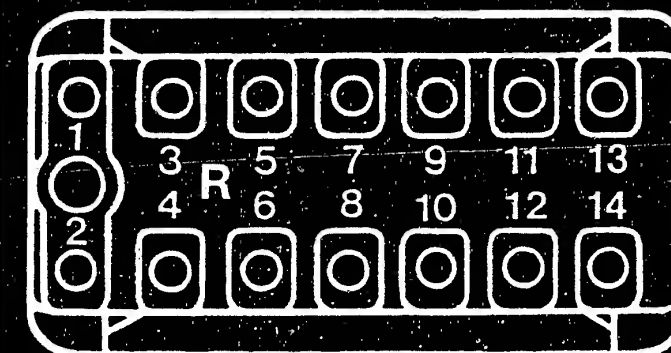
approx. 16...6.4 kΩ at

approx. 15...35°C at

temperature sensor.

Fault rectification:

Eliminate contact resistances/open circuits on leads or replace temperature sensor.



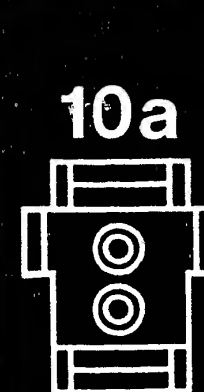
1a

141/154

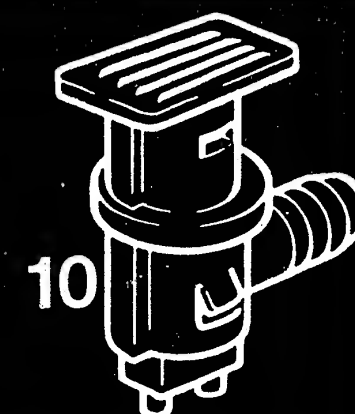
1a = Control unit plug, right

10 = Passenger-compartment temperature sensor

10a = Plug of passenger-compartment temperature sensor



10a



10

141/134

Continued on next picture page

C14

Trouble-shooting

Mercedes Benz W 124



C15

Trouble-shooting

Mercedes Benz W 124



Test step 3:

Operation:

Program switch "V"

Program switch "Ω"

Position



2

Component:

Passenger-compartment temperature sensor
(Change of resistance)

Measuring equipment:

Multimeter (Ω range)

Measuring range: 20 kΩ

Connection: Blue test sockets

Additional operation:

Spray refrigerant spray into passenger-compartment temperature sensor.

Test specification (reading):

Resistance must increase.

Does resistance reading increase?

Yes

Continued on next picture page

No

Malfunction:

No change in resistance detectable.

Trouble shooting:

Check the following leads for continuity with ohmmeter:

(Specification approx. 0 Ω)

- From control unit plug (1a) socket 2 to plug of passenger-compartment temperature sensor (10a)
- From control unit plug (1a) socket 2 to plug of passenger-compartment temperature sensor (10a).

On control unit plug (1a) check socket 2 to socket 10:

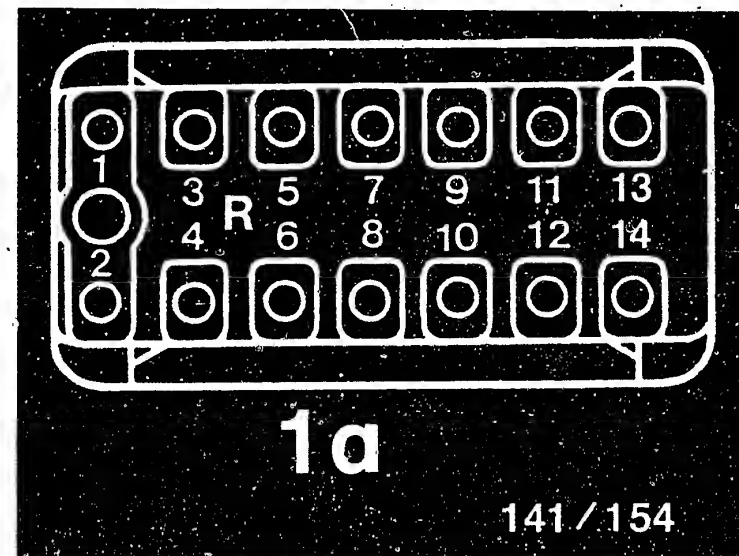
Reading should be: ∞Ω

(Plug of passenger-compartment temperature sensor disconnected).
Check resistance of passenger-compartment temperature sensor directly between the pins of the temperature sensor:

Reading should be:
approx. 16...6.4 kΩ at
approx. 15...35°C at
temperature sensor.

Fault rectification:

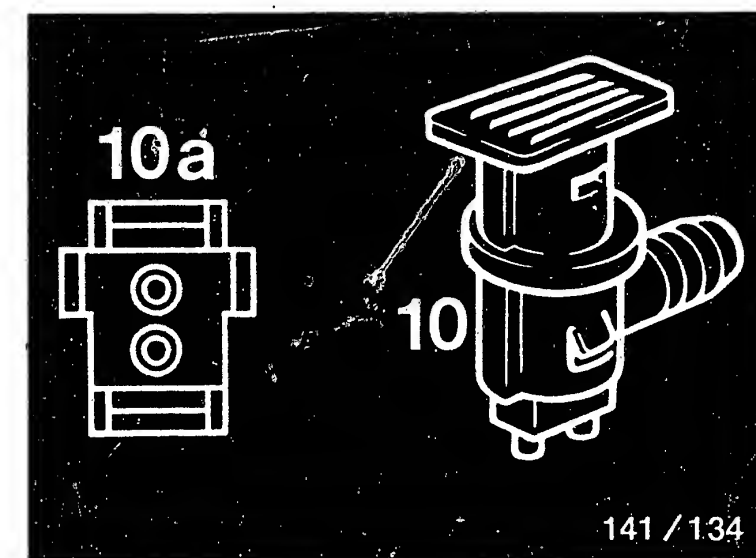
Eliminate contact resistances/open circuits on leads or replace temperature sensor.



1a = Control unit plug, right

10 = Passenger-compartment temperature sensor

10a = Plug of passenger-compartment temperature sensor



Test step 4:

Operation:

Program switch "V"

Program switch " Ω "

Component:

Evaporator temperature sensor

Measuring equipment:

Multimeter

Measuring range: 20 k Ω

Connection: Blue test sockets

Test specification (reading):

Approx. 20...6.5 k Ω at approx. 10...35°C (dependent on temperature)

Is reading within tolerance?

Position
↓

5

No

Malfunction:

Resistance reading not within tolerance.

Trouble-shooting:

Check the following leads for continuity with ohmmeter: (Specification approx. 0 Ω)

- From control unit plug (1a) (top picture) socket 4 to plug of evaporator temperature sensor (bottom picture)
- From control unit plug (1a) socket 10 to plug of evaporator temperature sensor.

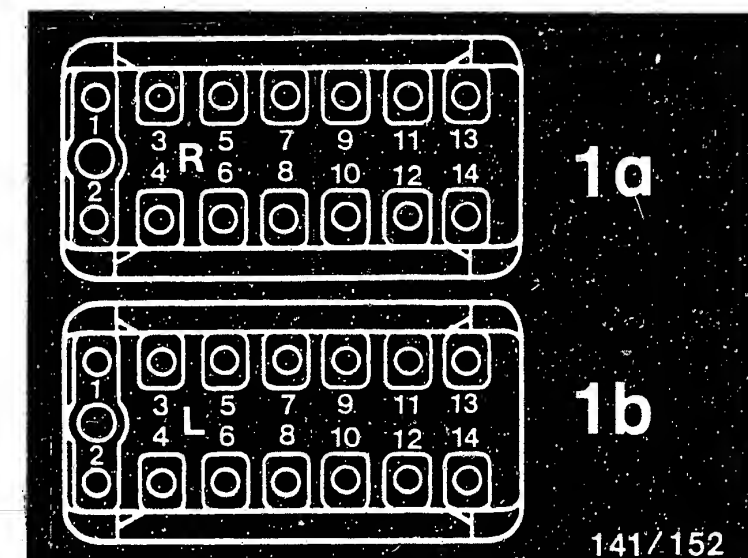
On control unit plug (1a) check socket 4 to socket 10:
Reading should be: $\infty\Omega$
(Plug of evaporator temperature sensor disconnected).
Check resistance of evaporator temperature sensor directly between pins of temperature sensor:
Reading should be:
Approx. 20...6.5 k Ω at approx. 10...35°C at temperature sensor

Fault rectification:

Eliminate contact resistances/open circuits on leads or replace evaporator temperature sensor.

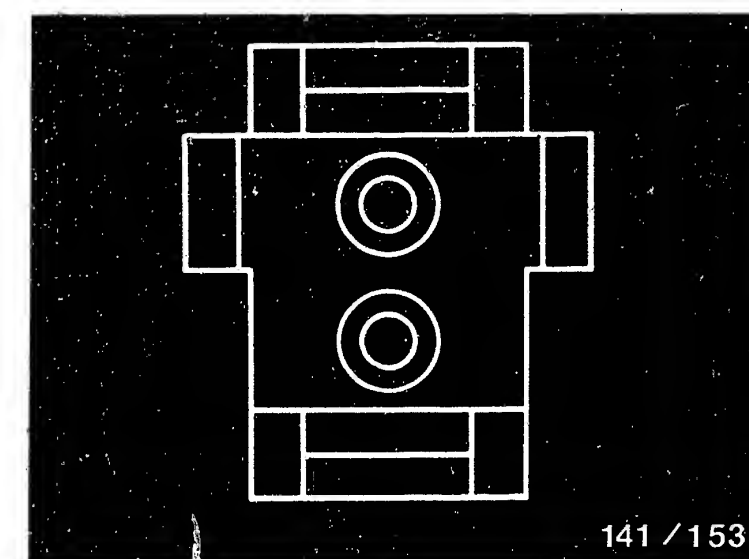
Yes

Continued on next picture page



1a = Control unit plug, right
1b = Control unit plug, left

Plug of evaporator temperature sensor



C18

Trouble-shooting

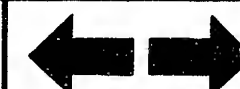
Mercedes Benz W 124



C19

Trouble-shooting

Mercedes Benz W 124



Test step 5:

Operation:

Program switch "V"

Program switch "Ω"

Component:

Blow-in temperature sensor

Measuring equipment:

Multimeter

Measuring range: 20 kΩ

Connection: Blue test sockets

Test specification (reading):

Approx. 15...6.5 kΩ at
approx. 16...35°C

Is reading within tolerance?

Position



9

No

Malfunction:

Resistance reading not within tolerance.

Trouble-shooting:

Check the following leads for continuity with ohmmeter.
(Specification approx. 0 Ω)

- From control unit plug (1a) socket 7 to plug of blow-in temperature sensor (see picture)
- From control unit plug (1a) socket 10 to plug of blow-in temperature sensor

On control unit plug (1a) check socket 7 to socket 10:

Reading should be: ∞Ω

(Plug of blow-in temperature sensor disconnected).

Check resistance of blow-in temperature sensor directly between pins of blow-in temperature sensor:

Reading should be:

approx. 15...6.5 kΩ at

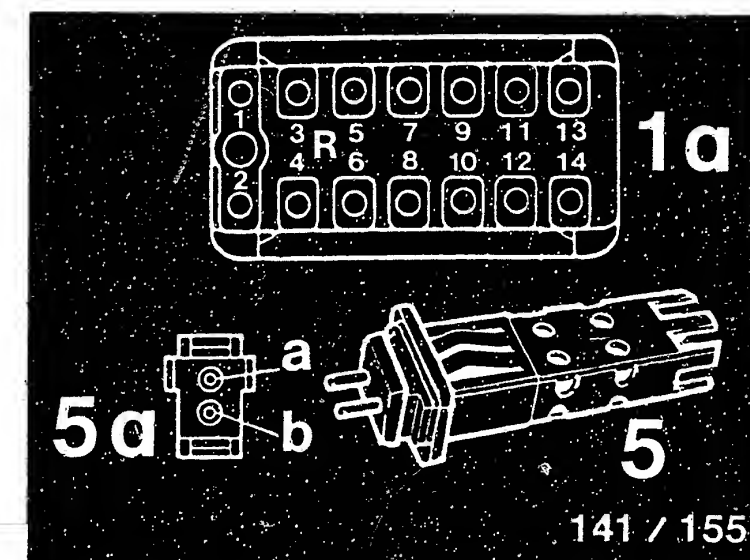
approx. 16...35°C at
temperature sensor

Fault rectification:

Eliminate contact resistances/open circuits on leads or replace blow-in temperature sensor.

Yes

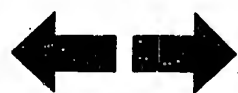
Continued on next picture page



1a = Control unit plug, right

5 = Blow-in temperature sensor

5a = Plug of blow-in temperature sensor



Test step 6:

Operation:

Program switch "V"

Program switch "Ω"

Position



10

Component:

Outside temperature sensor

Measuring equipment:

Multimeter

Measuring range: 20 kΩ

Connection: Blue test sockets

Test specification (reading):

Approx. 7...2.7 kΩ at

approx. 5...25°C

at temperature sensor

Is reading within tolerance?

No

Malfunction:

Resistance reading not within tolerance.

Trouble-shooting:

Check the following leads for continuity with ohmmeter:

(Specification approx. 0 Ω)

- From control unit plug (1a) socket 9 to plug of outside temperature sensor (see bottom picture)

- From control unit plug (1a) socket 10 to plug of outside temperature sensor.

On control unit plug (1a) check socket 9 to socket 10.

Reading should be: ∞Ω

(Plug of outside temperature sensor disconnected).

Check resistance of outside temperature sensor directly between the pins of the outside temperature sensor:

Reading should be:

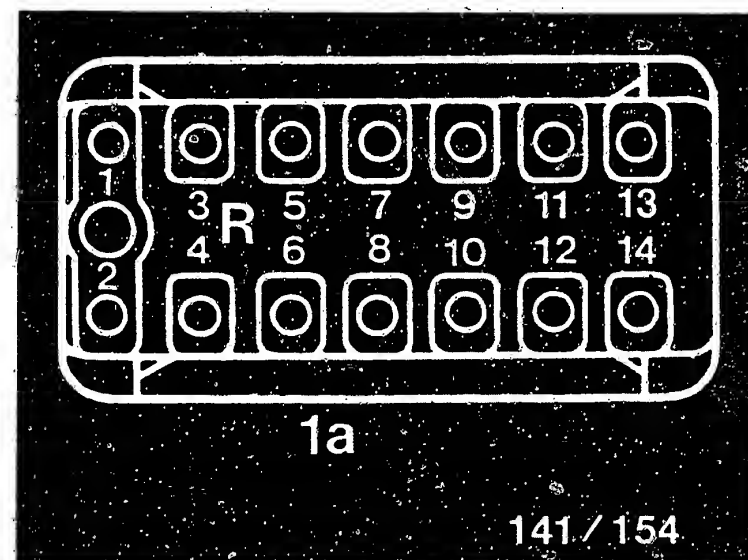
approx. 7...2.7 kΩ at

approx. 5...25°C at

temperature sensor

Fault rectification:

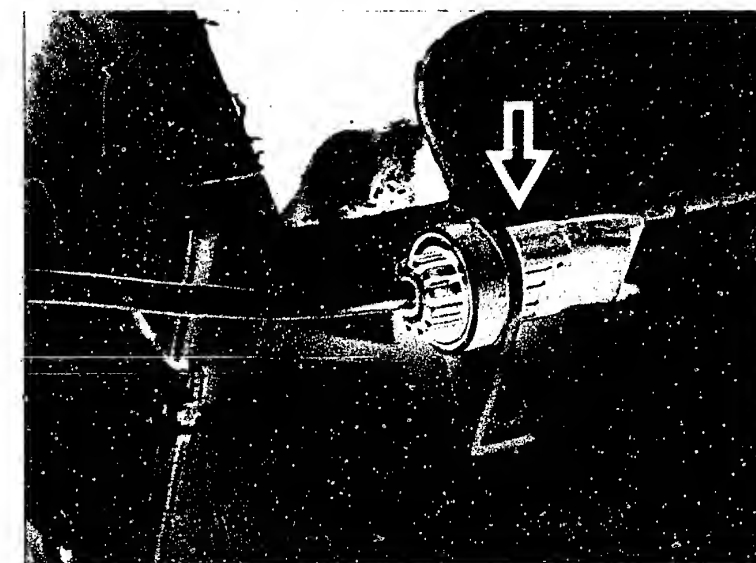
Eliminate contact resistances/open circuits on leads or replace outside temperature sensor.



1a

141 / 154

1a = Control unit plug, right



Continued on next picture page

C22

Trouble-shooting

Mercedes Benz W 124



C23

Trouble-shooting

Mercedes Benz W 124



Test step 7: Connect control unit; switch on ignition

Operation:

Program switch "V"

Position

1

Program switch "Ω"

-

Component:

Voltage at coolant temperature sensor

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection:

Red (positive) and black (negative) test sockets

Test specification (reading:)

approx. 6.5...2.5 V at

approx. 20...85°C at
temperature sensor

Is reading within tolerance?

No

Malfunction:

Voltage reading not within tolerance.

Trouble-shooting:

Check the following leads for continuity with ohmmeter:

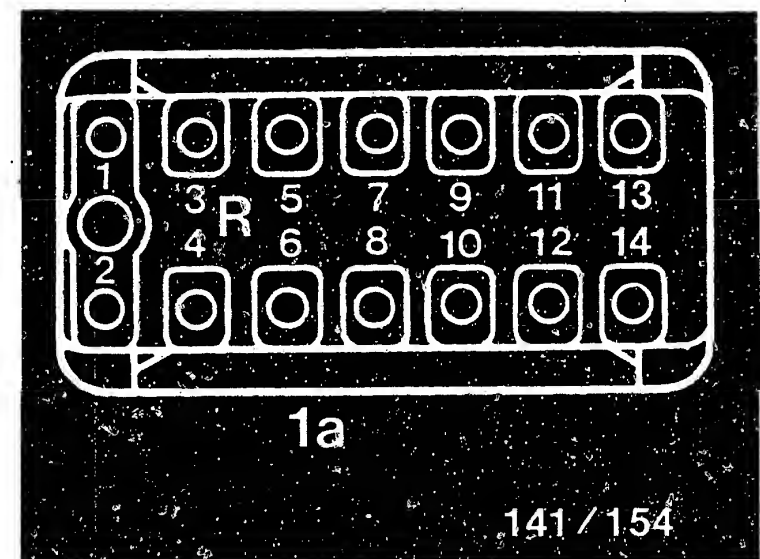
(Specification approx. 0Ω)

- From control unit plug (1a) socket 8 to plug of coolant temperature sensor
- From control unit plug (1a) socket 8 to plug of coolant temperature gauge socket 2
- From control unit plug (1a) socket 10 to battery term. 31 (ground).

Fault rectification:

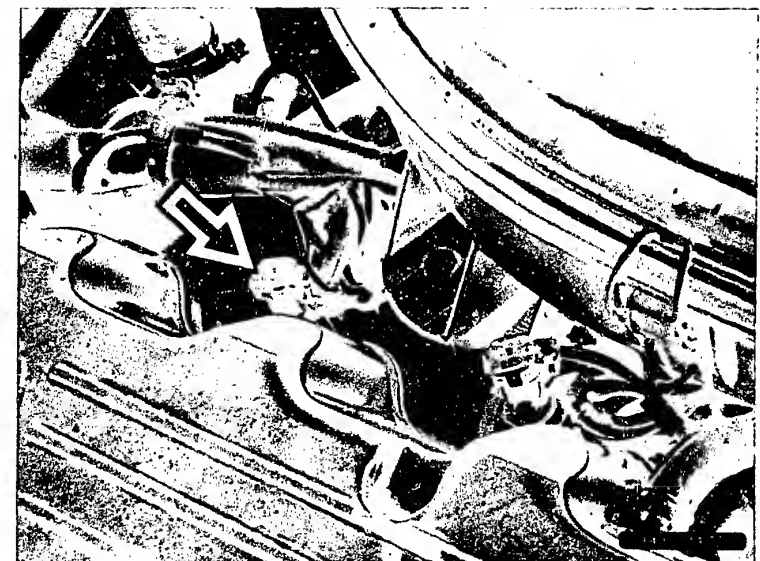
Eliminate contact resistances/open circuits on leads.

If no faults are found in the peripherals, replace control unit.



Yes

Continued on next picture page



D1

Trouble-shooting
Mercedes Benz W 124



D2

Trouble-shooting
Mercedes Benz W 124



Test step 8:

Operation:

Program switch "V"

Position

2

Program switch "Ω"

-

Component:

Voltage at passenger-compartment temperature sensor

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive)

and black (negative) test sockets

Test specification (reading):

approx. 3...2 V at

approx. 15...35°C at
temperature sensor

Is reading within tolerance?

No

Malfunction:

Test specification not within tolerance.

Trouble-shooting:

Switch off ignition; disconnect control unit plug.

Check the following leads for continuity with ohmmeter:

(Specification approx. 0 Ω)

- From control unit plug (1a) socket 2 to plug of passenger-compartment temperature sensor (10a)

- From control unit plug (1a) socket 10 to plug of passenger-compartment temperature sensor (10a)

On control unit plug (1a) check socket 2 to socket 10:

Reading should be: ∞Ω

(Plug of passenger-compartment temperature sensor disconnected).

Check resistance of passenger-compartment temperature sensor directly between pins of the temperature sensor:

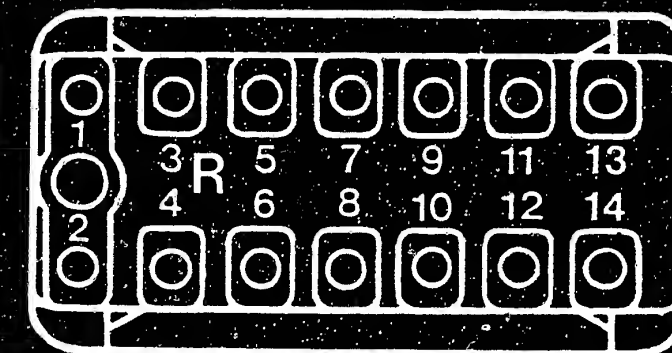
Reading should be:

approx. 16...6.4 kΩ at

approx. 15...35°C at
temperature sensor

Fault rectification

Eliminate contact resistances/open circuits on leads or replace temperature sensor.

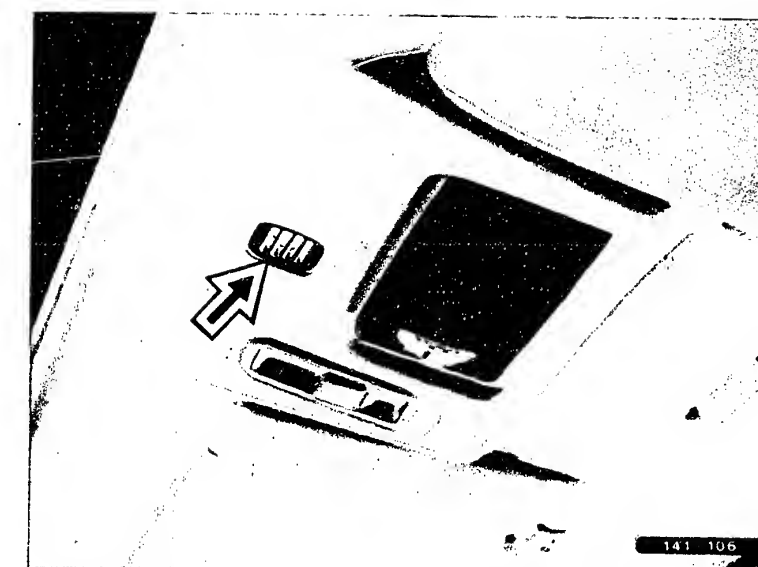


1a

141-154

Yes

Continued on next picture page



141-106

D3

Trouble-shooting

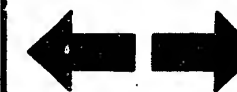
Mercedes Benz W 124



D4

Trouble-shooting

Mercedes Benz W 124



Test step 8.1:

Operation:

Position

Program switch "V"

2

Program switch "Ω"

-

Component:

Passenger-compartment temperature sensor
(admission of air to sensor)

Measuring equipment:

Paper strip

Test specification (reading):

Hold paper strip in front of opening of
passenger-compartment temperature sensor;
must be pulled in.

Paper strip pulled in?

No

Malfunction:

Drawing in of air not detectable

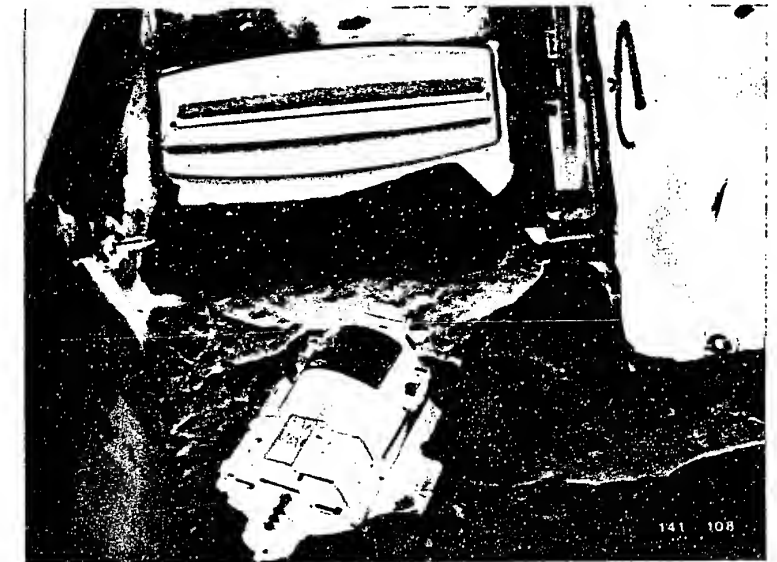
Trouble-shooting:

Check hose between passenger-compartment
temperature sensor housing and
air-admission blower for leaks and
security.

Using voltmeter on plug of air-
admission blower (see top picture),
check socket 1 to socket 2 (ignition
on)

Reading should be: approx. U_B

Eliminate contact resistances/open
circuits on leads. If reading U_B
present and auxiliary blower not
operating, replace auxiliary blower.



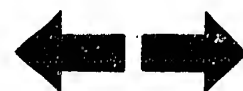
Yes

Continued on next picture page

D5

Trouble-shooting

Mercedes Benz W 124



D6

Trouble-shooting

Mercedes Benz W 124



Test step 9:

<u>Operation:</u>	<u>Position</u>
Program switch "V"	3
Program switch "Ω"	-

Component:
Electronic control unit power supply

Measuring equipment:
Multimeter

Measuring range: 20 V

Connection: Red (positive) and black (negative) test sockets

Test specification (reading):

> 10 V

Reading within tolerance?

No

Malfunction:

Reading < 10 V

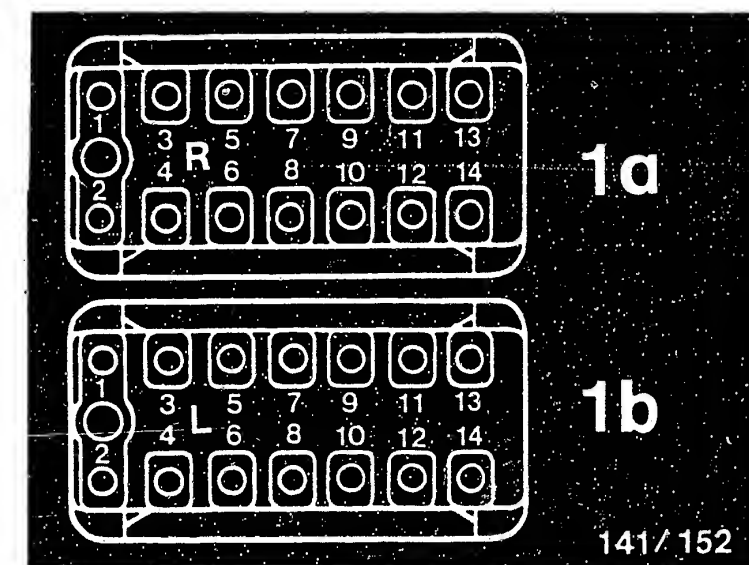
Trouble-shooting:

Switch off ignition;
disconnect control unit plug.
Switch on ignition.
Using voltmeter on control unit plug (1b) check socket 13 to term. 31 (ground) and socket 12 to term. 15 (positive):

Reading should be: > 10 V

Fault rectification:

Eliminate open circuits/contact resistances on leads.



1a = Control unit plug, right
1b = Control unit plug, left

Yes

Continued on next picture page

D7

Trouble-shooting

Mercedes Benz W 124



D8

Trouble-shooting

Mercedes Benz W 124



Test step 10: (Only for vehicles with auxiliary heater)

Operation: Position

Program switch "V" 4

Program switch "Ω" -

Component:

Auxiliary heater

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive) and
black (negative) test sockets

Additional operation:

Switch on auxiliary heater (control
panel)

(See top picture, arrow)

Test specification (reading):

> 10 V

Is reading > 10 V

No

Malfunction:

Reading <10 V

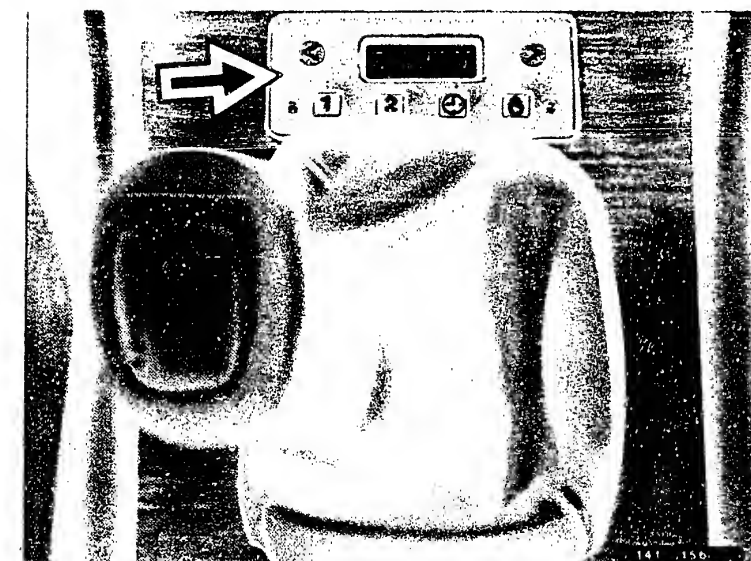
Trouble-shooting:

Switch off ignition; disconnect
control unit plug (control unit is
in equipment space behind battery).
Using ohmmeter, check for continuity
in lead between control unit plug
(1a) socket 13 and plug of auxiliary
heater control unit (socket on plug
must be found with ohmmeter).

Reading should be: approx. 0 Ω

Fault rectification:

Eliminate contact resistances/open
circuits on leads. Check auxiliary
heater according to owner manual.

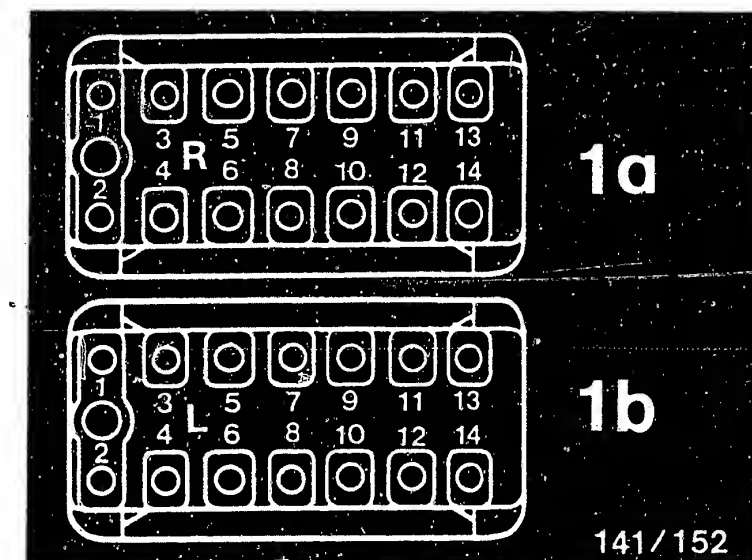


1a = Control unit plug,
right

1b = Control unit plug,
left

Yes

Continued on next picture page



D9

Trouble-shooting

Mercedes Benz W 124



D10

Trouble-shooting

Mercedes Benz W 124



141/152

Test step 11: (Heating assistance is installed as an optional extra on vehicles with diesel engine only).

<u>Operation:</u>	<u>Position</u>
Program switch "V"	5
Program switch "Ω"	-

Component:

Heating assistance

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive) and black (negative) test sockets

Additional operation 1:

Coolant temperature <50°C

Temperature selector thumbwheel latched in "max" position.

Test specification (reading): >10 V

Additional operation 2:

Press button T5 on universal test adapter

Test specification (reading): <2 V

Test specification obtained?

Yes

Continued on next picture page

No

Malfunction:

Test specification not within tolerance.

Trouble-shooting:

Using voltmeter on control unit plug (1a) check socket 14 to socket 12:

Reading should be: >10 V

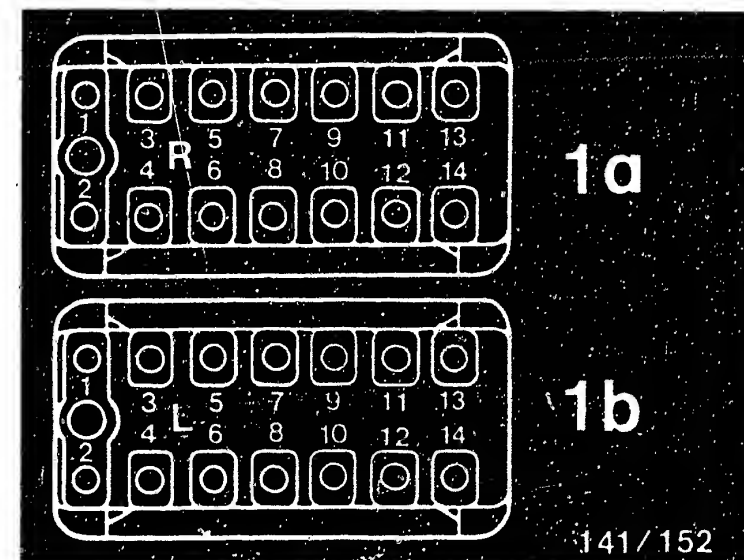
(Ignition on)

Using ohmmeter, check lead from control unit plug (1a) socket 14 to term. 30 (positive) and socket 12 to term. 31 (ground) (battery disconnected).

Reading should be: approx. 0 Ω

Fault rectification:

Eliminate contact resistances/open circuits on leads.



1a = Control unit plug, right

1b = Control unit plug, left

D11

Trouble-shooting

Mercedes Benz W 124



D12

Trouble-shooting

Mercedes Benz W 124



Test step 12:

Operation:	Position
Program switch "V"	8
Program switch "Ω"	-

Component:
Outside temperature sensor

Measuring equipment:
Multimeter

Measuring range: 20 V

Connection: Red (positive) and black (negative) test sockets

Test specification (reading):
approx. 2.5...3.6 V at
approx. 25....5°C at
temperature sensor

Reading within tolerance?

No

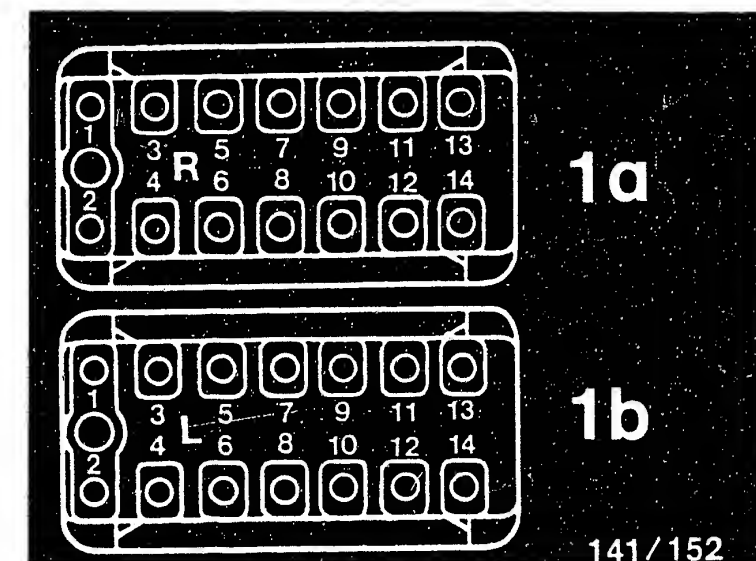
Malfunction:
Test specification not within tolerance.

Trouble-shooting:
Using ohmmeter, check lead from control unit plug (1a) socket 9 and socket 10 to plug of outside temperature sensor.
Reading should be: approx. 0 Ω

Using ohmmeter, check directly between pins of outside temperature sensor:

Reading should be:
approx. 7...2.5 kΩ at
approx. 5...25°C at
temperature sensor

Fault rectification:
Eliminate contact resistances/open circuits on leads.
Replace outside temperature sensor.



1a = Control unit plug, right
1b = Control unit plug, left

Yes

Continued on next picture page

D13

Trouble-shooting

Mercedes Benz W 124



D14

Trouble-shooting

Mercedes Benz W 124



Test step 13:

<u>Operation:</u>	<u>Position</u>
Program switch "V"	9
Program switch "Ω"	-

Component:
Blow-in temperature sensor

Measuring equipment:
Multimeter

Measuring range: 20 V

Connection: Red (positive) and black (negative) test sockets

Test specification (reading):
approx. 1.4...3 V at
approx. 35...16°C at
temperature sensor

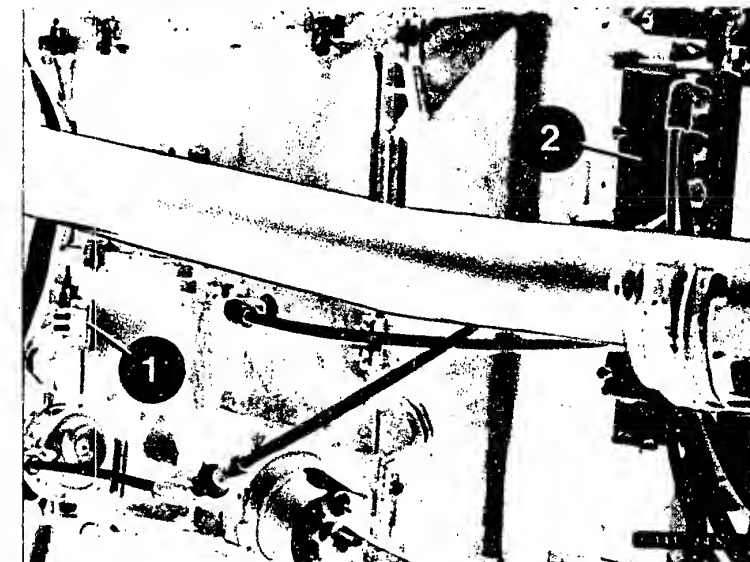
Reading within tolerance?

No

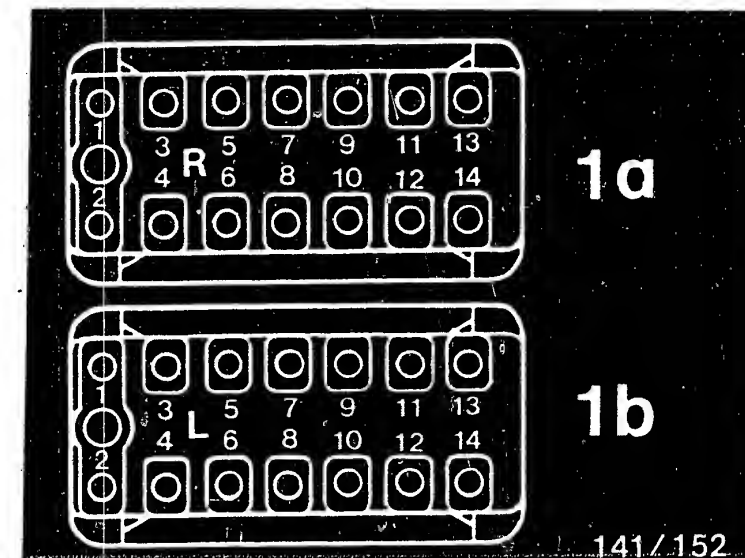
Malfunction:
Test specification not within tolerance.

Trouble-shooting:
Check the following leads for continuity with ohmmeter:
(Specification approx. 0 Ω)
- From control unit plug (1a) socket 7 to plug of blow-in temperature sensor
- From control unit plug (1a) socket 10 to plug of blow-in temperature sensor.
On control unit plug (1a) check socket 7 to socket 10:
Reading should be: ∞Ω
(Plug of blow-in temperature sensor disconnected).
Check resistance of blow-in temperature sensor directly between pins of blow-in temperature sensor:
Reading should be:
approx. 15...6.5 kΩ at
approx. 16...35°C at
temperature sensor

Fault rectification:
Eliminate contact resistances/open circuits on leads or replace blow-in temperature sensor (see top picture, 1).



1a = Control unit plug, right
1b = Control unit plug, left



Yes

Continued on next picture page

Test step 13.1:

Operation:

Program switch "V"

Position

9

Program switch "Ω"

-

Component:

Blow-in temperature sensor - change of resistance

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive) and black (negative) test sockets

Additional operation:

Take apart jumper between sockets 1 and 2 on universal test adapter. Start engine; engine running and at normal operating temperature. Blower at "max" speed

Test specification (reading):

Voltage reading must drop.

Does reading drop?

No

Malfunction: Reading does not drop.
Trouble-shooting: Check the following leads for continuity with ohmmeter:

- From control unit plug (1a) socket 7 to plug of blow-in temperature sensor and from control unit plug (1a) socket 10 to plug of blow-in temperature sensor.

Reading should be: approx. 0 Ω

- On control unit plug (1a) check socket 7 to socket 10: reading should be: ∞Ω

(Plug of blow-in temperature sensor disconnected).

Check resistance of blow-in temperature sensor directly between pins of blow-in temperature sensor.

Reading should be:

approx. 15...6.5 kΩ at

approx. 16...35°C at

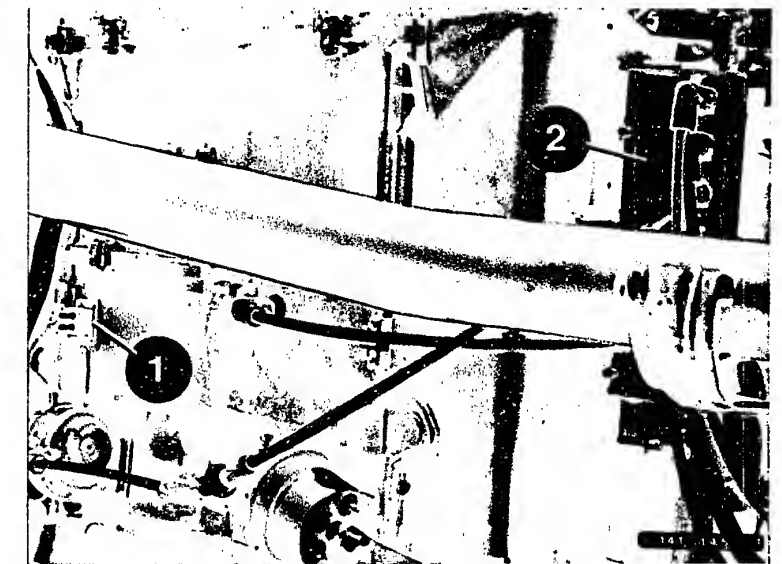
temperature sensor.

Fault rectification: Eliminate contact resistances/open circuits on leads, or replace blow-in temperature sensor.

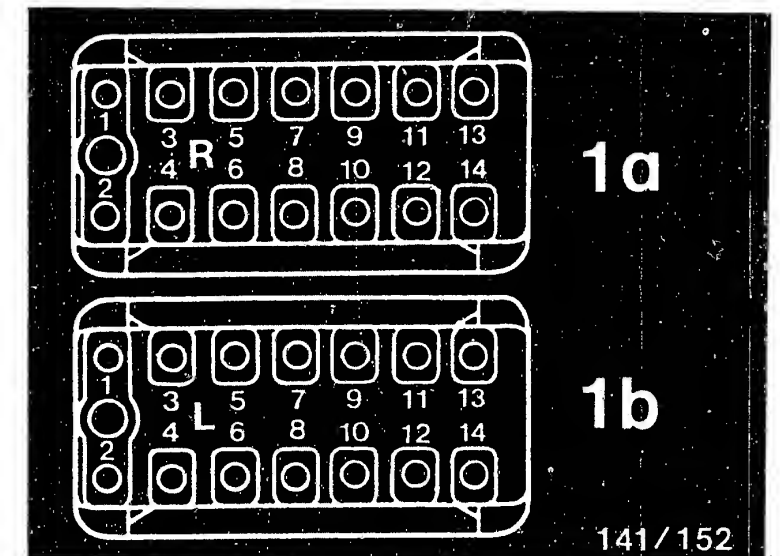
Note: If reading does not drop, heating water in heat exchanger is already hot. Re-establish jumper between sockets 1 and 2; temperature selector thumbwheel latched in "min" position. Wait until heating water in heat exchanger has cooled down again, then repeat test.

Yes

Continued on next picture page



1a = Control unit plug, right
1b = Control unit plug, left



Test step 14:

Operation:

Program switch "V" 10

Program switch "Ω" -

Component:

Evaporator temperature sensor

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive) and
black (negative) test sockets

Additional operation:

Re-establish jumper between sockets 1 and 2
on universal test adapter.

Test specification (reading):

approx. 2...3 V at
approx. 35...10°C at
temperature sensor

Reading within tolerance?

No

Malfunction:

Voltage reading not within tolerance.

Trouble-shooting:

Check the following leads for con-
tinuity with ohmmeter:

(Specification approx. 0 Ω)

- From control unit plug (1a)
socket 4 to plug of evaporator
temperature sensor

- From control unit plug (1a)
socket 10 to plug of evaporator
temperature sensor.

On control unit plug (1a) check
socket 4 to socket 10:

Reading should be: ∞Ω

(Plug of evaporator temperature
sensor disconnected).

Check resistance of evaporator
temperature sensor directly between
pins of temperature sensor:

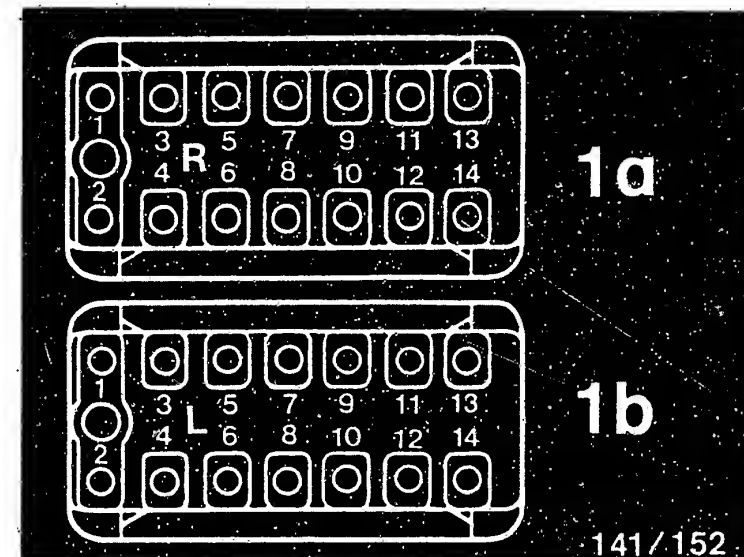
Reading should be:

approx. 20...6.5 kΩ at

approx. 10...35°C at
temperature sensor.

Fault rectification:

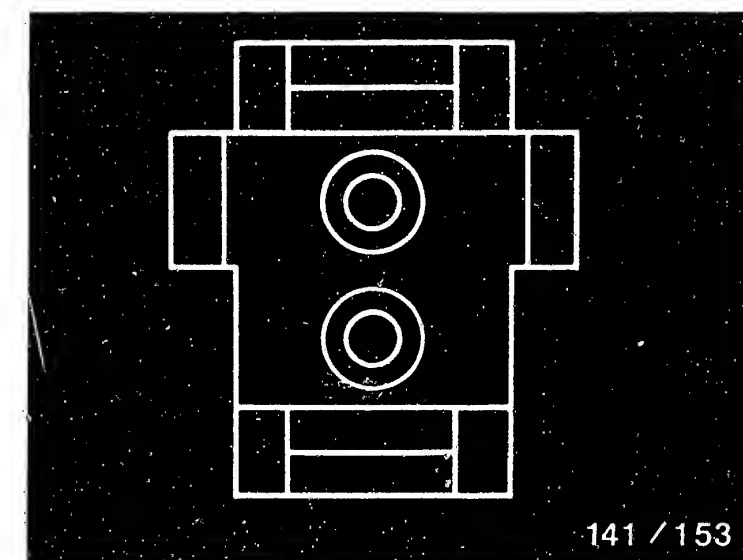
Eliminate contact resistances/open
circuits on leads, or replace
evaporator temperature sensor.



1a = Control unit plug, right

1b = Control unit plug, left

Plug of evaporator temperature
sensor



Continued on next picture page

D 19

Trouble-shooting
Mercedes Benz W 124



D 20

Trouble-shooting
Mercedes Benz W 124



Test step 14.1:

Operation:

Program switch "V"

Position

10

Program switch "Ω"

-

Component:

Evaporator temperature sensor - change of resistance

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive) and black (negative) test sockets

Additional operation:

Press button "AC" on control panel.

Test specification (reading):

Voltage reading must rise.

Does voltage reading rise?

No

Malfunction:

Voltage reading does not rise.

Trouble-shooting:

Check the following lead for continuity with ohmmeter:

(Specification approx. 0Ω)

- From control unit plug (1a) socket 4 to plug of evaporator temperature sensor

- From control unit plug (1a) socket 10 to plug of evaporator temperature sensor.

On control unit plug (1a) check socket 4 to socket 10:

Reading should be: $\infty\Omega$

(Plug of evaporator temperature sensor disconnected).

Check resistance of evaporator temperature sensor directly between pins of temperature sensor:

Reading should be:

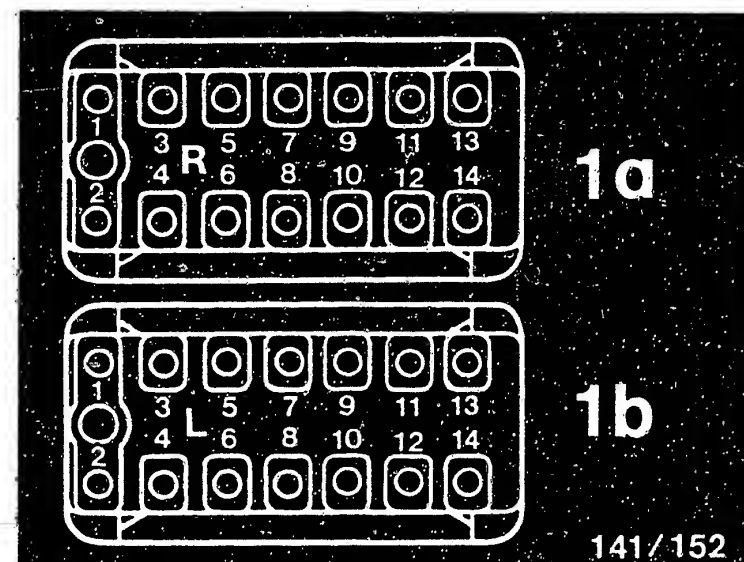
approx. 20...6.5 k Ω at

approx. 10...35°C at

temperature sensor

Fault rectification:

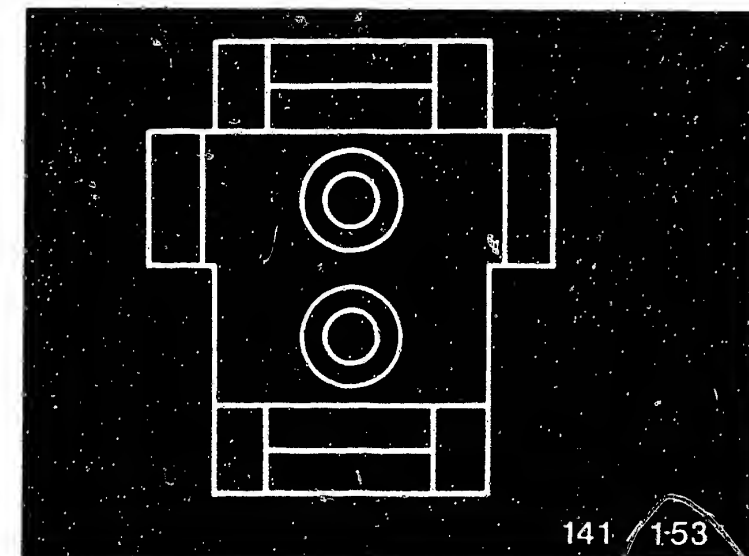
Eliminate contact resistances/open circuits on leads, or replace evaporator temperature sensor.



1a = Control unit plug, right

1b = Control unit plug, left

Plug of evaporator temperature sensor



Yes

Continued on next picture page

D21

Trouble-shooting

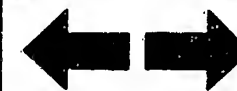
Mercedes Benz W 124



D22

Trouble-shooting

Mercedes Benz W 124



Test step 15:

Operation:	Position
Program switch "V"	12
Program switch "Ω"	-

Component:
Speed signal generator

Measuring equipment:
Multimeter

Measuring range: 20 V

Connection: Red (positive) and black (negative) test sockets

Additional operation:
Move vehicle slowly.

Test specification (reading):
Reading fluctuates between 0 V and approx. U_B

Reading (speed signal) present?

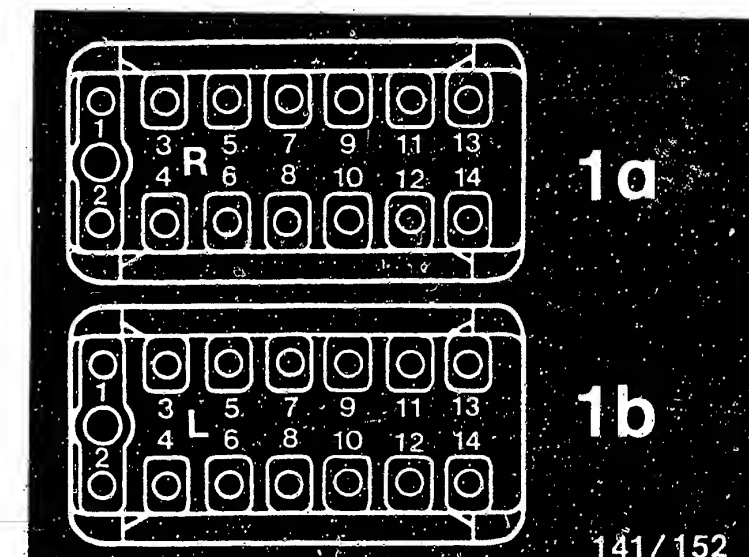
No →

Malfunction:
No reading (speed signal) present.

Trouble-shooting:
Using ohmmeter, check lead from control unit plug (1a) socket 3 to plug of speed signal generator:
Reading should be: approx. 0 Ω

Using voltmeter on plug of speed signal generator, check socket 1 to ground:
Reading should be: approx. U_B (ignition on)

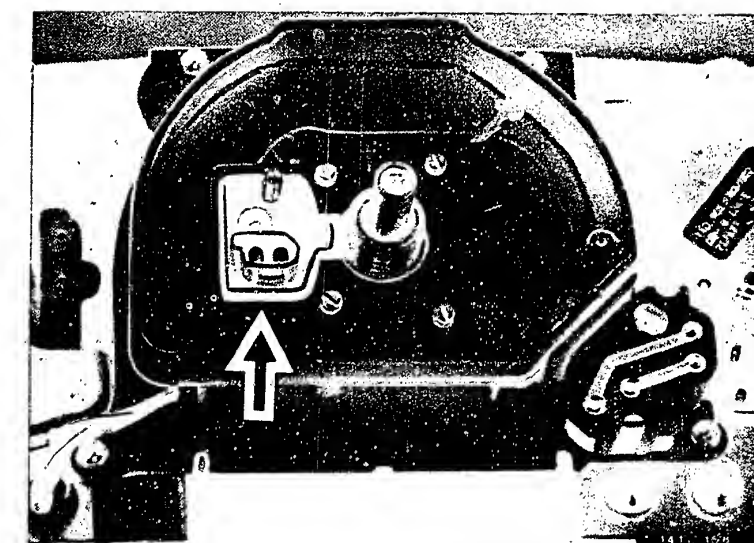
Fault rectification:
Eliminate contact resistances/open circuits on leads. Replace speed signal generator.



1a = Control unit plug, right
1b = Control unit plug, left

Yes

Continued on next picture page



Test step 16:

Operation: Position

Program switch "V" 13

Program switch "Ω" -

Component:

Fresh/recirculated air valve

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive) and
black (negative) test sockets

Additional operation 1:

Press button "EC" on control panel.

Test specification (reading):

>10 V

Additional operation 2:

Operate fresh/recirculated air switch.

Test specification (reading):

<2 V

Both readings obtained?

No

Malfunction:

Test specifications not within tolerance.

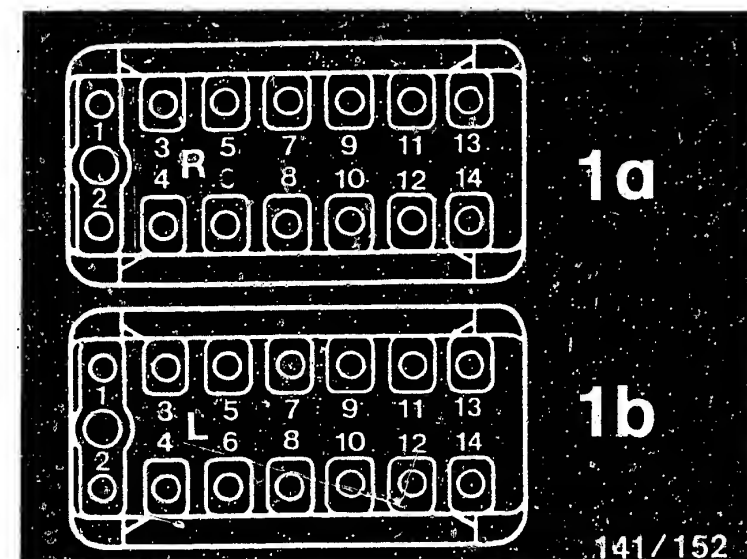
Trouble-shooting:

Using ohmmeter, check lead from control unit plug (1b) socket 1 to plug of valve strip socket 1:
Reading should be: approx. 0 Ω

Using voltmeter on plug of valve strip, check socket 8 to ground:
Reading should be: > 10 V
(Ignition on)
Using ohmmeter, check directly at pins of valve strip term. 8 to term. 1:
Reading should be: approx. 50...80 Ω

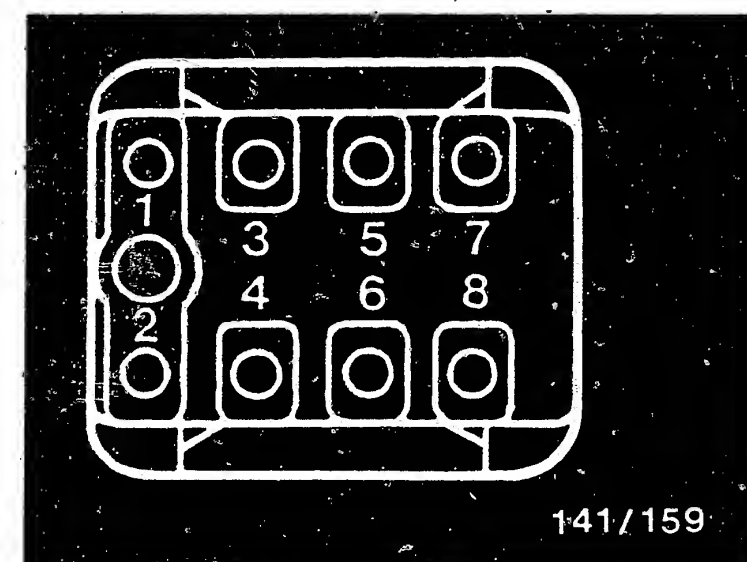
Fault rectification:

Eliminate contact resistances/open circuits on leads. Replace valve strip (not a Bosch component).



1a = Control unit plug, right
1b = Control unit plug, left

Plug of valve strip



Continued on next picture page

E1

Trouble-shooting

Mercedes Benz W 124



E2

Trouble-shooting

Mercedes Benz W 124



Test step 17:

Operation:

Position

Program switch "V" 14

Program switch "Ω" -

Component:

Fresh/recirculated air valve

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive) and
Black (negative) test sockets

Test specification (reading): < 2 V

Additional operation:

Press "DEF" button on control panel:

Test specification (reading): >10 V

Both readings obtained?

No

Malfunction:

Test specifications not within tolerance.

Trouble-shooting:

Using ohmmeter, check lead from control unit plug (1b) socket 2 to plug of valve strip socket 2:

Reading should be: approx. 0 Ω

Using voltmeter on plug of valve strip, check socket 8 to ground:

Reading should be: > 10 V

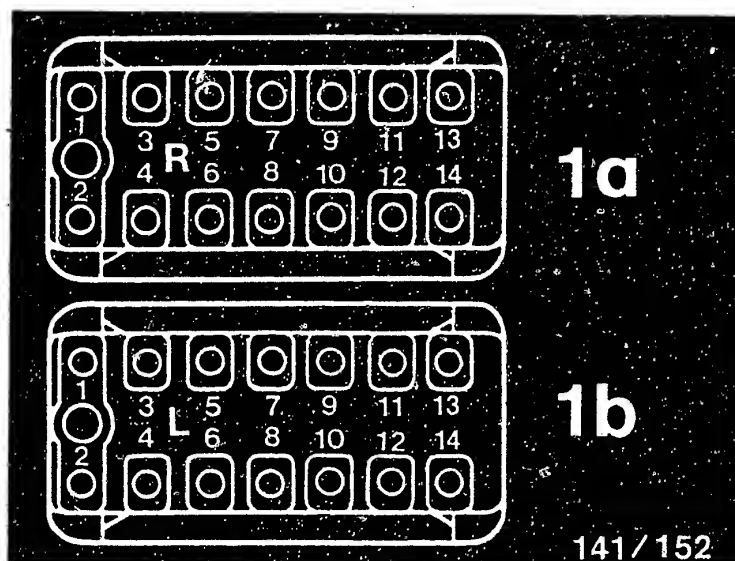
(ignition on)

Using ohmmeter, check directly at pins of valve strip term. 8 to term. 2:

Reading should be: approx. 50...80 Ω

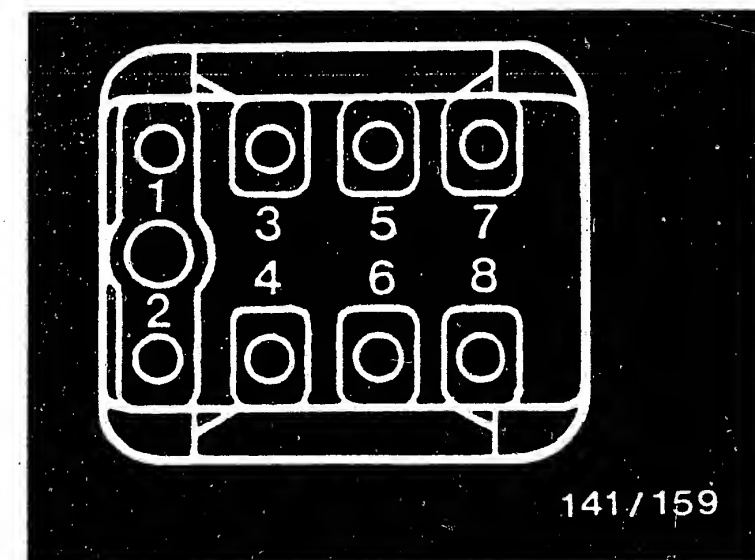
Fault rectification:

Eliminate contact resistances/open circuits on leads. Replace valve strip (not a Bosch component).



1a = Control unit plug, right
1b = Control unit plug, left

Plug of valve strip



Continued on next picture page

E3

Trouble-shooting

Mercedes Benz W 124



E4

Trouble-shooting

Mercedes Benz W 124



Test step 18:

Operation:

Position

Program switch "V"

15

Program switch "Ω"

-

Component:

Center nozzle valve

Measuring equipment:

Multimeter

Measuring range: 20 V

Connectin: Red (positive) and
black (negative) test sockets

Additional operation:

Press button "AC" on control panel.

Temperature selector thumbwheel latched in
"min" position.

Test specification (reading):

> 10 V

Button "AC" on control panel pressed.

Temperature selector thumbwheel latched in
"min" position.

Test specification (reading):

< 2 V

Both readings obtained?

Yes

Continued on next picture page

No

Malfunction:

Test specifications not within
tolerance.

Trouble-shooting:

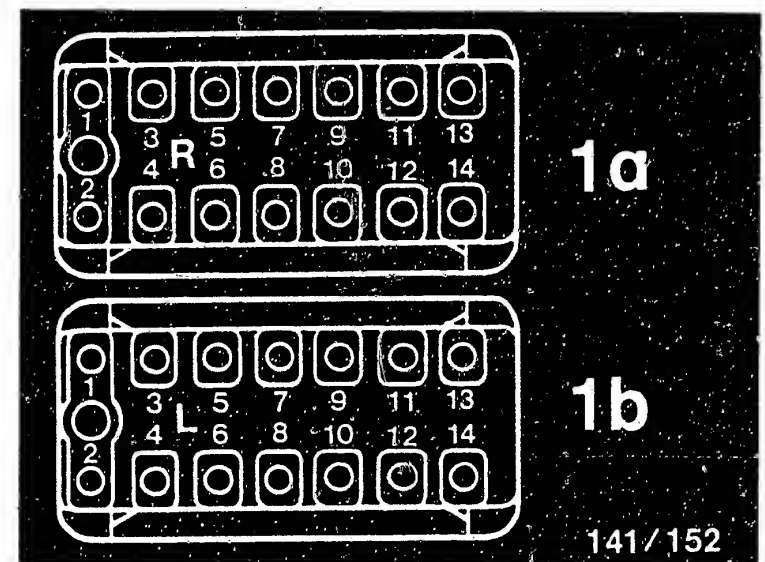
Using ohmmeter, check lead from
control unit plug (1b) socket 4 to
plug of valve strip socket 4:
Reading should be: approx. 0 Ω

Using voltmeter on plug of valve
strip, check socket 8 to ground:
Reading should be: > 10 V
(Ignition on)

Using ohmmeter, check directly at
pins of valve strip term. 8 to
term. 4.
Reading should be: approx. 50...80 Ω

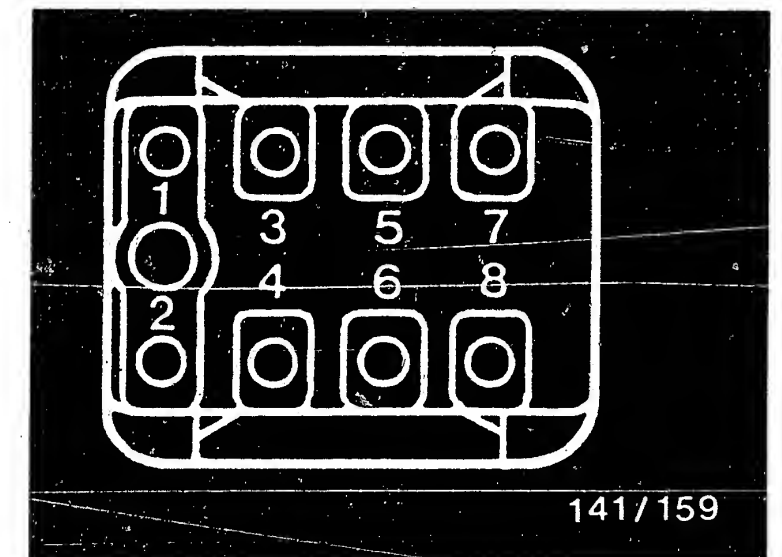
Fault rectification:

Eliminate contact resistances/open
circuits on leads. Replace valve
strip (not a Bosch component).



1a = Control unit plug, right
1b = Control unit plug, left

Plug of valve strip



E5

Trouble-shooting

Mercedes Benz W 124



E6

Trouble-shooting

Mercedes Benz W 124



Test step 19:

Operation:

Program switch "V" 16

Program switch "Ω" -

Component:

Footwell nozzle

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive) and black (negative) test sockets

Additional operation:

Press button "BI-LEV" on control panel.

Test specification (reading):

> 10 V

Button "BI-LEV" on control panel pressed:

Test specification (reading):

< 2 V

Both readings obtained?

Yes

Continued on next picture page

No

Malfunction

Test specifications not within tolerance.

Trouble-shooting:

Using ohmmeter, check lead from control unit plug (1b) socket 3 to plug of valve-strip socket 3:
Reading should be: approx. 0 Ω

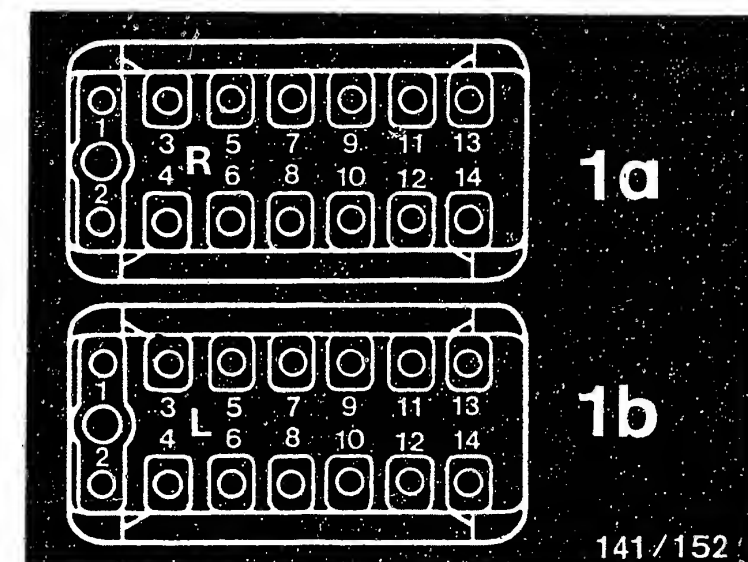
Using voltmeter on plug of valve strip, check socket 8 to ground:
Reading should be > 10 V
(Ignition on)

Using ohmmeter, check directly at pins of valve strip term. 8 to term. 3.

Reading should be: approx. 50...80 Ω

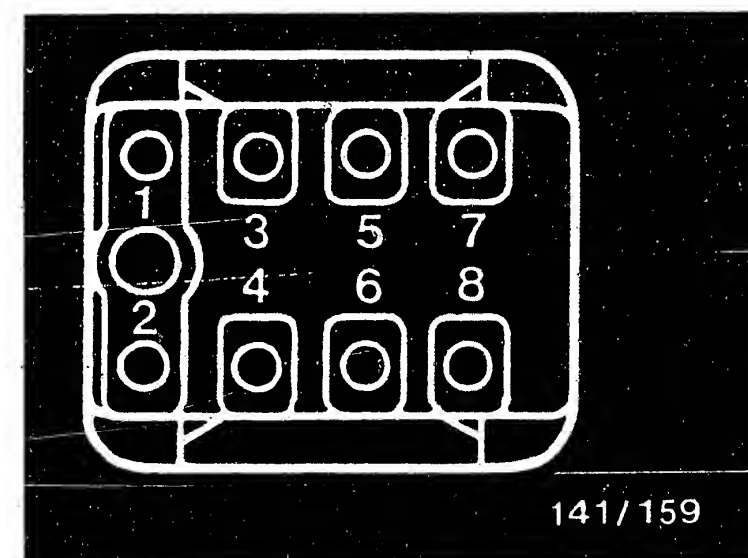
Fault rectification:

Eliminate contact resistances/open circuits on leads. Replace valve strip (not a Bosch component).



1a = Control unit plug, right
1b = Control unit plug, left

Plug of valve strip



E7

Trouble-shooting

Mercedes Benz W 124



E8

Trouble-shooting

Mercedes Benz W 124



Test step 20:

Operation:

Program switch "V"

Position

17

Program switch "Ω"

-

Component:

Skimming flap valve

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive) and black (negative) test sockets

Additional operation 1:

Press button T 6 on universal test adapter (simulation of outside temperature sensor hot).

Test specification (reading): < 2 V

Additional operation 2:

Button "DEF" on control panel pressed

Test specification (reading): > 10 V

Both test specifications obtained?

No

Malfunction:

Test specifications not within tolerance.

Trouble-shooting:

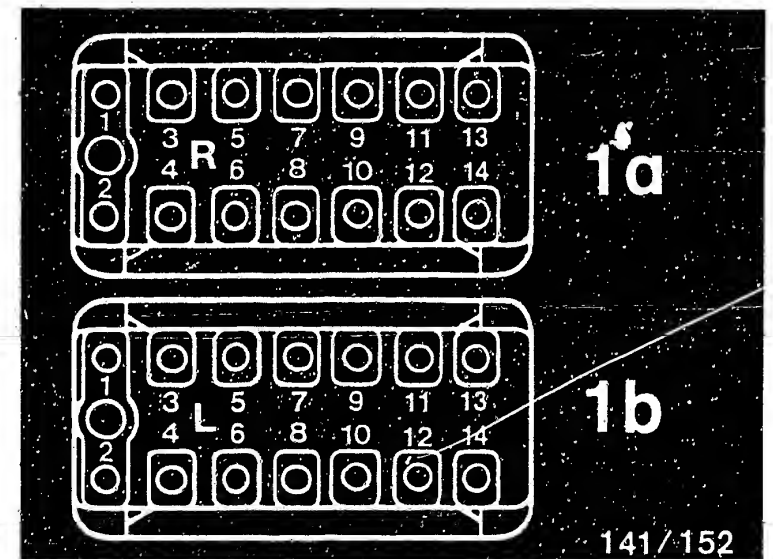
Using ohmmeter, check lead from control unit plug (1b) socket 6 to plug of valve strip socket 6:
Reading should be: approx. 0 Ω

Using voltmeter on plug of valve strip, check socket 8 to ground:
Reading should be > 10 V
(Ignition on)

Using ohmmeter, check directly at pins of valve strip term. 8 to term. 6.
Reading should be: approx. 50...80 Ω

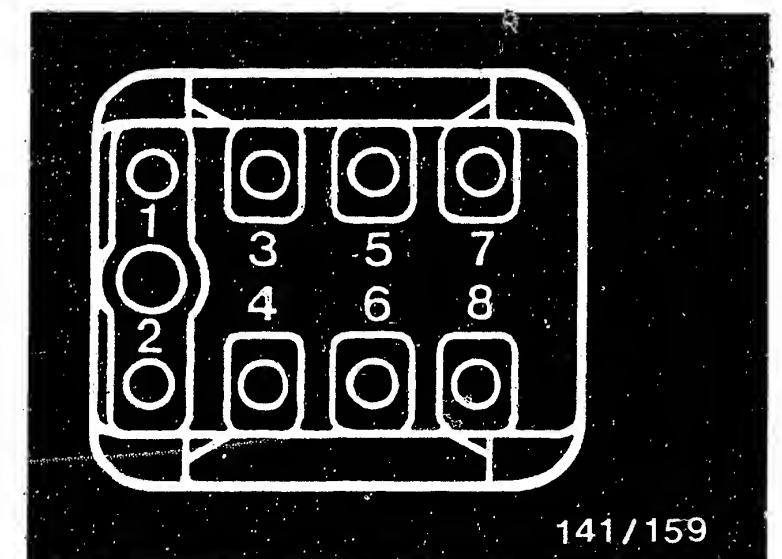
Fault rectification:

Eliminate contact resistances/open circuits on leads. Replace valve strip (not a Bosch component).



1a = Control unit plug, right
1b = Control unit plug, left

Plug of valve strip



Yes

Continued on next picture page

E9

Trouble-shooting

Mercedes Benz W 124



E10

Trouble-shooting

Mercedes Benz W 124



Test step 21:

Operation:

Position

Program switch "V"

18

Program switch "Ω"

-

Component:

Defroster nozzle valve

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive) and
black (negative) test sockets

Additional operation:

Press button "AC" on control panel.

Test specification (reading):

> 10 V

Button "AC" on control panel pressed

Test specification (reading): < 2 V

Both readings obtained?

No

Malfunction:

Test specifications not within
tolerance.

Trouble-shooting:

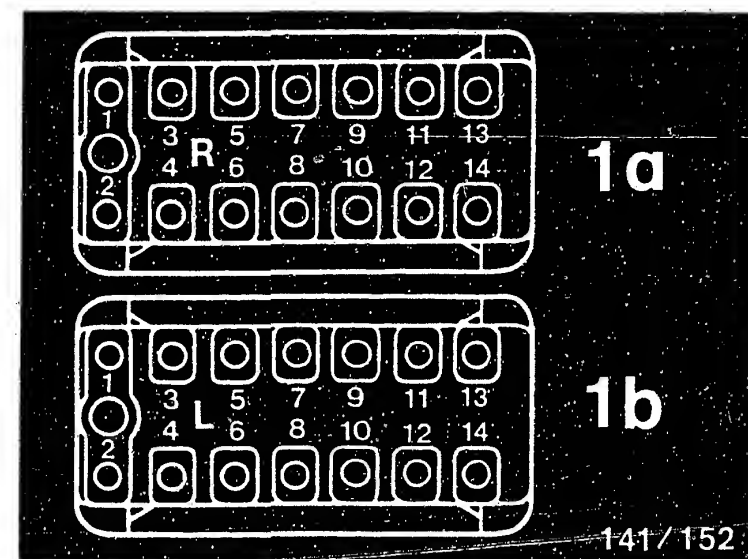
Using ohmmeter, check lead from
control unit plug (1b) socket 5 to
plug of valve strip socket 5:
Reading should be: approx. 0 Ω

Using voltmeter on plug of valve
strip, check socket 8 to ground:
Reading should be > 10 V
(Ignition on)

Using ohmmeter, check directly at
pins of valve strip term. 8 to
term. 5.
Reading should be: approx. 50...80 Ω

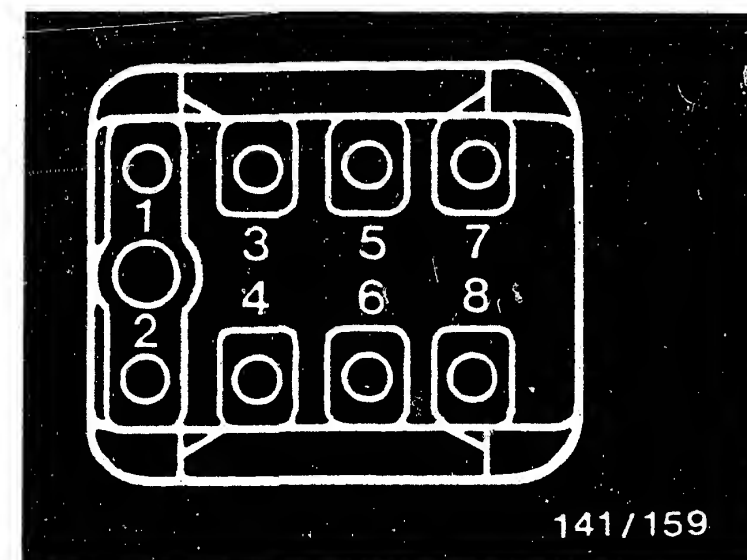
Fault rectification:

Eliminate contact resistances/open
circuits on leads. Replace valve
strip (not a Bosch component).



1a = Control unit plug, right
1b = Control unit plug, left

Plug of valve strip



Continued on next picture page

Yes

E11

Trouble-shooting

Mercedes Benz W 124



E12

Trouble-shooting

Mercedes Benz W 124



Test step 22:

Operation:

Program switch "V" 19

Program switch "Ω" -

Component:

Compressor clutch energization

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive) and black (negative) test sockets

Additional operation 1:

Press button "EC" on control panel.

Test specification (reading): > 10 V

Additional operation 2:

Press button "AC".

Test specification (reading): < 2 V
(Dependent on temperature at evaporator sensor).

Test specifications obtained?

Yes

Continued on next picture page?

No

Malfunction:

Test specifications not within tolerance.

Trouble-shooting:

Using ohmmeter, check for continuity in lead from control unit plug (1b) socket 7 through pressure switch (see bottom picture, arrow) to plug-base of compressor cutoff control unit socket 10:

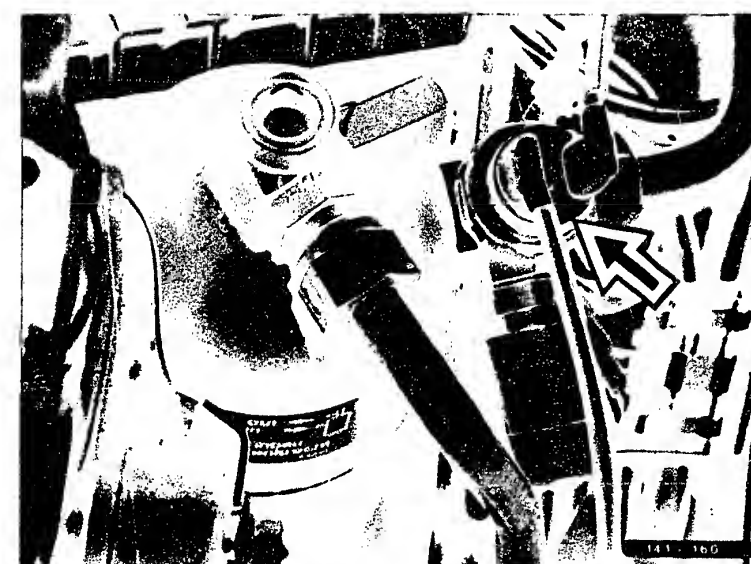
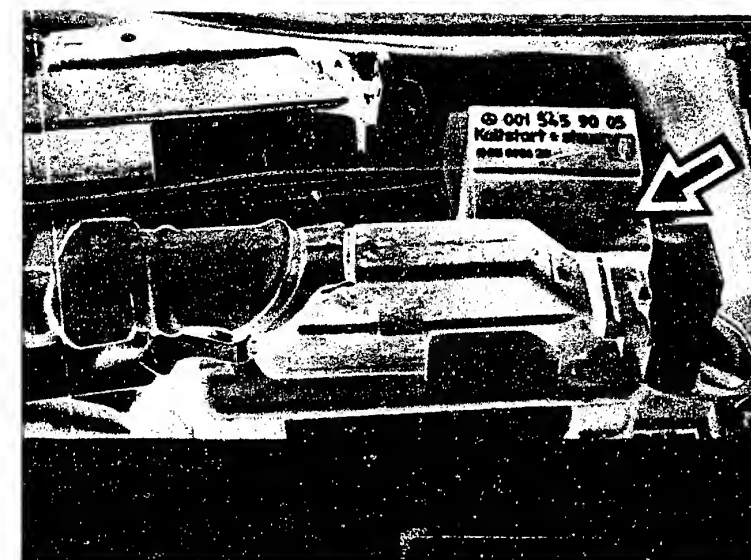
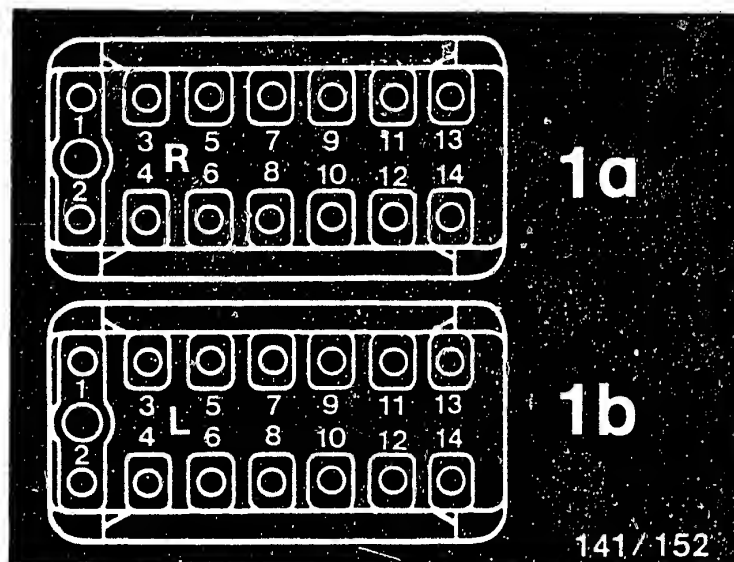
Reading should be: approx. 0 Ω

Using voltmeter on plug-in base of compressor cutoff control unit, check socket 5 to ground:
Reading should be: > 10 V
(Ignition on).

Using ohmmeter on plug-in base of compressor cutoff control unit, check socket 1 to ground:
Reading should be: approx. 0 Ω

Fault rectification:

Replace pressure switch (not a Bosch component).
Try replacing compressor cutoff control unit.
Eliminate contact resistances/open circuits on leads.



E13

Trouble-shooting

Mercedes Benz W 124



E14

Trouble-shooting

Mercedes Benz W 124



Test step 22.1:

Operation: Position

Program switch "V" 19

Program switch "Ω" -

Component:

Compressor clutch energization

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive) and black (negative) test sockets

Additional operation:

Press button T1 on universal test adapter (simulation of icing protection).

Test specification (reading):

< 2 V

Button T1 pressed

> 10 V

(Compressor must switch off)

Test specifications obtained?

Yes

Continued on next picture page

No

Malfunction:

Test specifications not within tolerance.

Trouble-shooting:

Using ohmmeter, check for continuity in lead from control unit plug (1b) socket 7 through pressure switch (see bottom picture, arrow) to plug-base of compressor cutoff control unit socket 10:

Reading should be: approx. 0 Ω

Using voltmeter on plug-in base of compressor cutoff control unit, check socket 5 to ground: Reading should be: > 10 V (Ignition on).

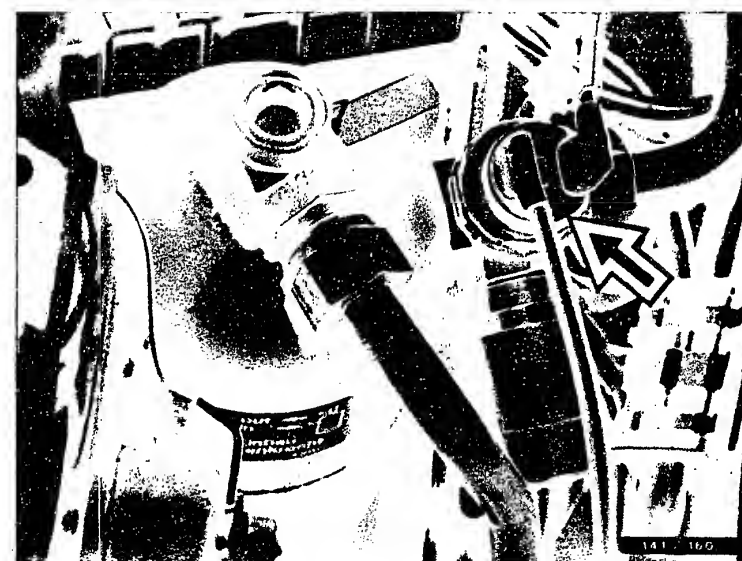
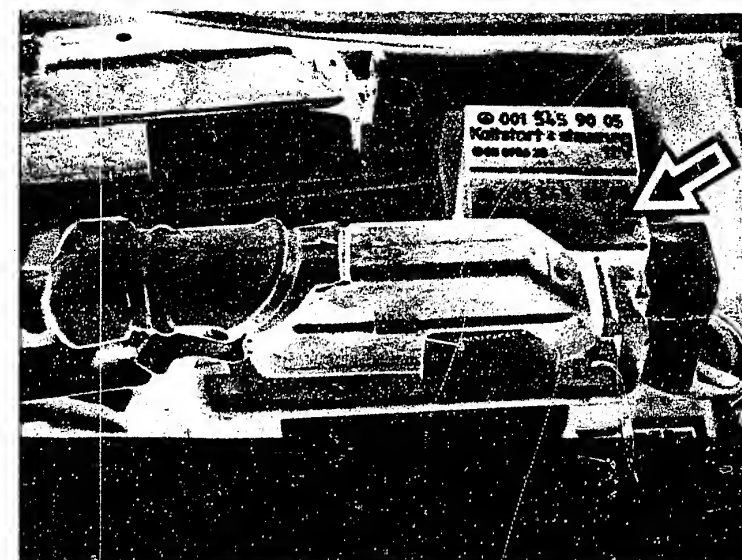
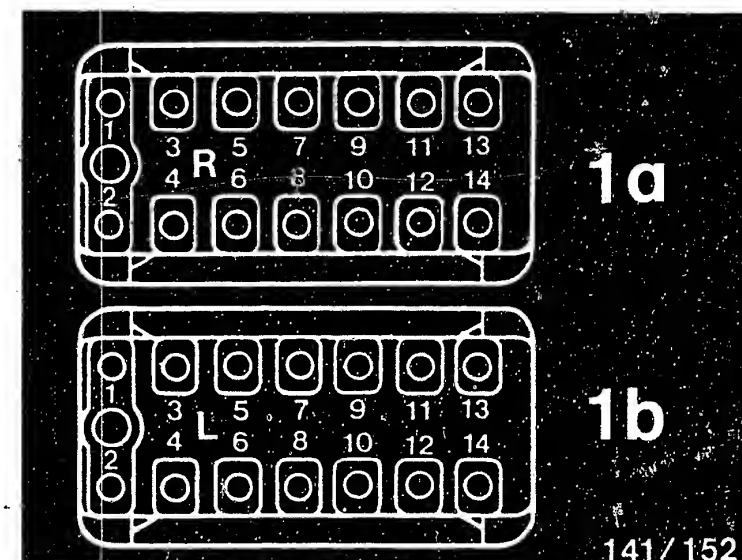
Using ohmmeter on plug-in base of compressor cutoff control unit, check socket 1 to ground: Reading should be: approx. 0 Ω

Fault rectification:

Replace pressure switch (not a Bosch component).

Try replacing compressor cutoff control unit.

Eliminate contact resistances/open circuits on leads.



E15

Trouble-shooting
Mercedes Benz W 124



E16

Trouble-shooting
Mercedes Benz W 124



Test step 22.2:

Operation:

Program switch "V" 19

Program switch "Ω" -

Component:

Compressor clutch energization
(switch-off functions)

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive) and
black (negative) test sockets

Additional operation:

Press button "T4" on universal test adapter
(simulation of engine temperature > 120°C)

Test specification (reading):

< 2 V

Button T4 pressed

> 10 V

Compressor must switch off.

Readings obtained?

Does compressor switch off?

Yes

Continued on next picture page

No

Malfunction:

Test specifications not within
tolerance.
Compressor does not switch off.

Trouble-shooting:

Using ohmmeter, check for continuity
in lead from control unit plug (1b)
socket 7 through pressure switch
to plug-base of compressor cutoff
control unit socket 10.

Reading should be: approx. 0 Ω

Using voltmeter on plug-in base of
compressor cutoff control unit,
check socket 10 to ground:
Reading should be: > 10 V
(Ignition on).

Using ohmmeter on plug-in base of
compressor cutoff control unit,
check socket 1 to ground:

Reading should be: approx. 0 Ω

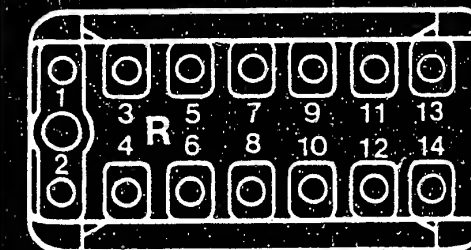
Fault rectification:

Replace pressure switch (not a
Bosch component).

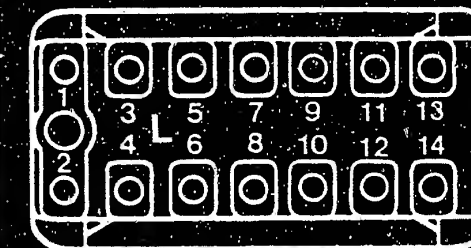
Try replacing compressor cutoff
control unit.

Replace automatic air conditioner
control unit.

Eliminate contact resistances/open
circuits on leads.

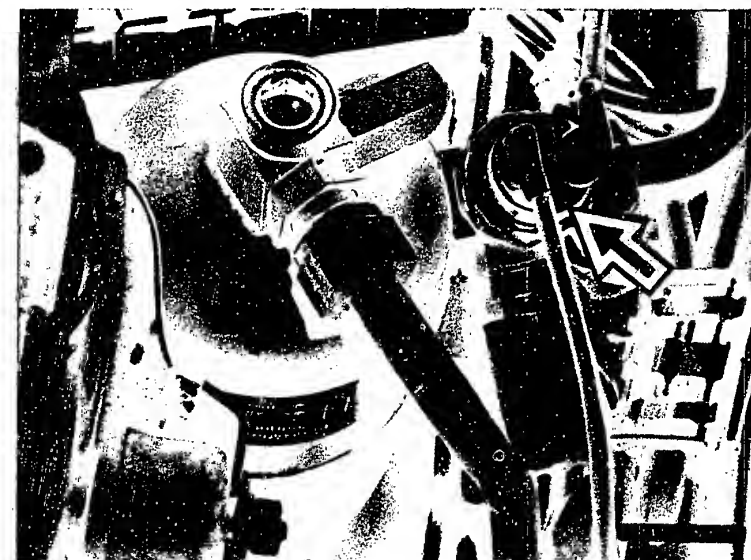
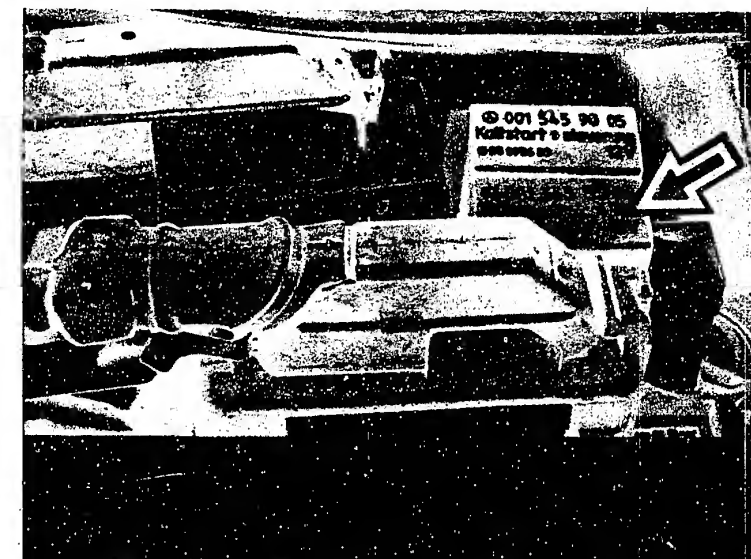


1a



1b

141/152



E17

Trouble-shooting

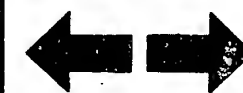
Mercedes Benz W 124



E18

Trouble-shooting

Mercedes Benz W 124



Test step 23:

Operation:

Operation:	Position
Program switch "V"	20
Program switch "Ω"	-

Component:

Defroster nozzle energization

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive) and black (negative) test sockets

Additional operation 1:

Press button "DEF" on control panel.

Test specification (reading): $> 10\text{ V}$

Additional operation 2:

Press button "AC".

Test specification (reading): $< 2\text{ V}$

Readings obtained?

No

Malfunction:

Test specifications not within tolerance.

Trouble-shooting:

Using ohmmeter, check for continuity in lead from control unit plug (1b) socket 8 to plug of valve strip socket 7:

Reading should be: approx. $0\ \Omega$

Using voltmeter on plug of valve strip, check socket 8 to ground:
Reading should be: $> 10\text{ V}$ (Ignition on)

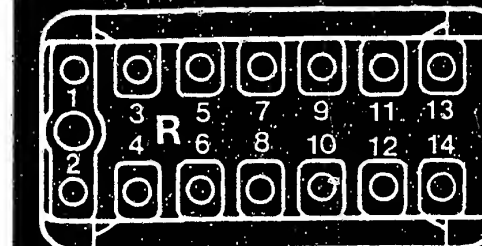
Using ohmmeter, check directly at pins of valve strip term. 8 to term. 7:

Reading should be: approx. $50...80\ \Omega$

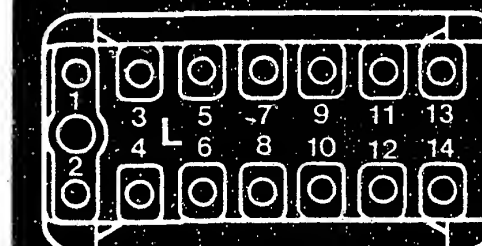
Fault rectification:

Eliminate contact resistances/open circuits on leads.

Replace valve strip (not a Bosch component).



1a

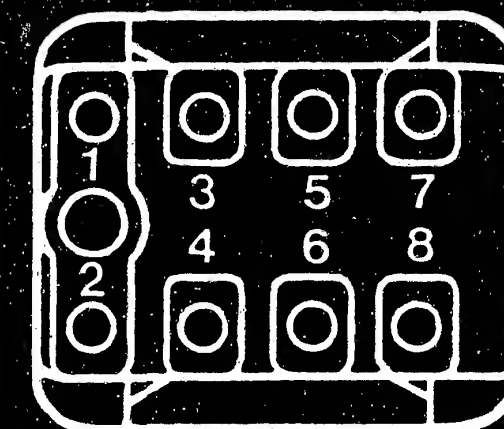


1b

141/152

1a = Control unit plug, right
1b = Control unit plug, left

Plug of valve strip



141/159

Yes

Continued on next picture page

E19

Trouble-shooting

Mercedes Benz W 124



E20

Trouble-shooting

Mercedes Benz W 124



Test step 24:

Operation:

Program switch "V" 21

Program switch "Ω" -

Component:

Heating water pump energization

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive) and black (negative) test sockets

Additional operation:

Temperature selector thumbwheel before position "max" latched.

Test specification (reading):

< 2 V

Check by feeling that heating water pump is operating.

Reading obtained?
Heating water pump operating?

Yes

Continued on next picture page

No

Malfunction:

Test specification not within tolerance. Heating water pump not operating.

Trouble-shooting:

Using ohmmeter, check for continuity in lead from control unit plug (1b) socket 10 to plug of heating water pump socket 2:

Reading should be: approx. 0 Ω

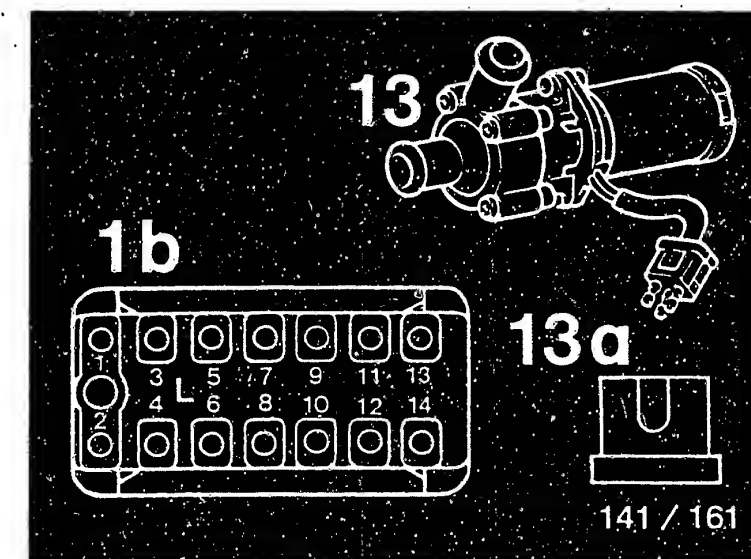
Using voltmeter on plug of heating water pump, check to ground:

Reading should be: > 10 V
(Ignition on)

Fault rectification:

Eliminate contact resistances/open circuits on leads.

Replace heating water pump.



1b = Control unit plug, left

13 = Heating water pump

13a = Plug to heating water pump



E21

Trouble-shooting

Mercedes Benz W 124



E22

Trouble-shooting

Mercedes Benz W 124



Test step 24.1:

<u>Operation:</u>	<u>Position</u>
-------------------	-----------------

Program switch "V"	21
--------------------	----

Program switch "Ω"	-
--------------------	---

Component:

Heating water pump energization

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive) and
Black (negative) test sockets

Additional operation:

Temperature selector thumbwheel latched in
"min" position.

Test specification (reading):

> 10 V

Check by feeling that heating water pump is
not operating.

Reading obtained?
Heating water pump not operating?

Yes

Continued on next picture page

No

Malfunction:

Test specification not within
tolerance. Heating water pump
not operating.

Trouble-shooting:

Using ohmmeter, check for continuity
in lead from control unit plug (1b)
socket 10 to plug of heating water
pump socket 2:

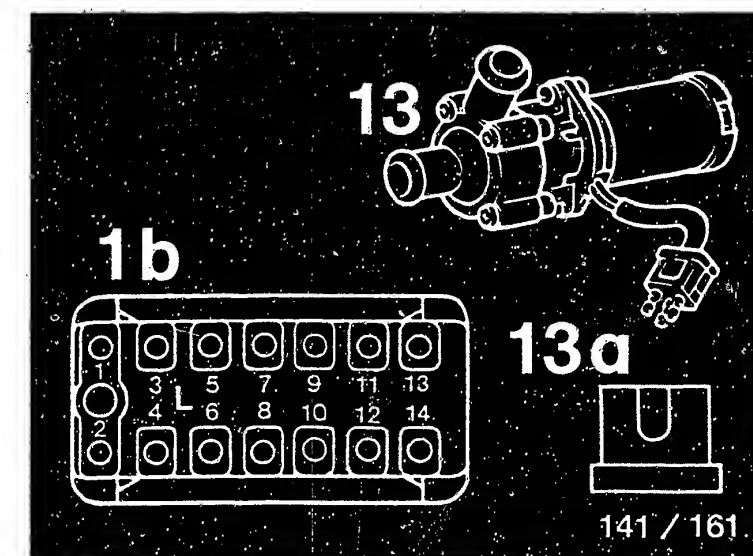
Reading should be: approx. 0 Ω

Using voltmeter on plug of heating
water pump, check to ground:

Reading should be: > 10 V
(Ignition on)

Fault rectification:

Eliminate contact resistances/open
circuits on leads.
Replace heating water pump.



1b = Control unit plug, left
13 = Heating water pump
13a = Plug to heating water pump



E23

Trouble-shooting

Mercedes Benz W 124



E24

Trouble-shooting

Mercedes Benz W 124



Test step 25:

Operation:

Program switch "V" 22

Program switch "Ω" -

Component:

Heating water valve energization

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive) and black (negative) test sockets

Additional operation:

Press button "EC" on control panel.

Temperature selector thumbwheel latched in "min" position.

Test specification (reading):

< 2 V

Check by feeling that there is no heating effect.

Reading obtained?
No heating effect?

Yes

Continued on next picture page

No

Malfunction:

Test specification not within tolerance.

Trouble-shooting:

Using ohmmeter, check for continuity in lead from control unit plug (1b) socket 9 to plug of heating water valve socket 2:

Reading should be: approx. 0 Ω

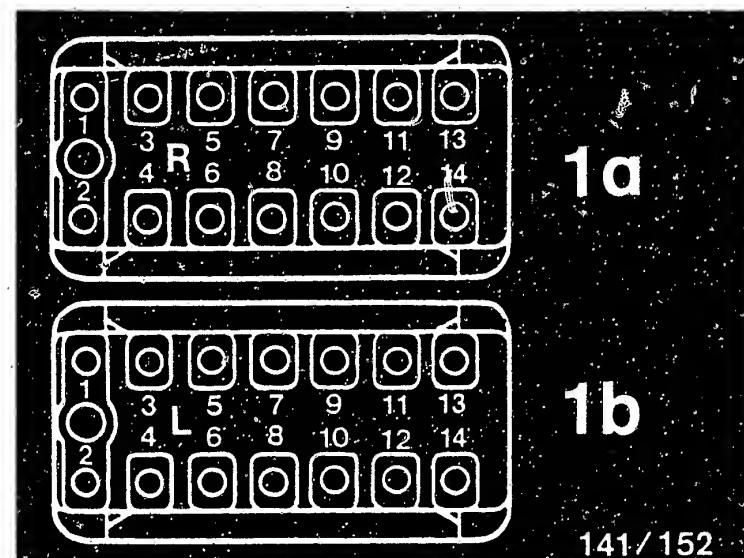
Using voltmeter on plug of heating water valve, check socket 1 to ground:

Reading should be: > 10 V (Ignition on)

Fault rectification:

Eliminate contact resistances/open circuits on leads.

Replace heating water valve.



1a = Control unit plug, right
1b = Control unit plug, left



F1

Trouble-shooting

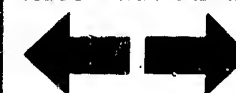
Mercedes Beznz W 124



F2

Trouble-shooting

Mercedes Benz W 124



Test step 25.1:

Operation:

Position

Program switch "V" 22

Program switch "Ω" -

Component:

Heating water valve energization

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive) and
black (negative) test sockets

Additional operation:

Turn temperature selector thumbwheel to
"max" latched position.

Test specification (reading):

> 10 V (Wait for adaptation time)

Check by feeling that there is a heating
effect.

Reading obtained?

Heating effect present?

No

Malfunction:

Test specification not within
tolerance.

Trouble-shooting:

Using ohmmeter, check for continuity
in lead from control unit plug (1b)
socket 9 to plug of heating water
valve socket 2:

Reading should be: approx. 0 Ω

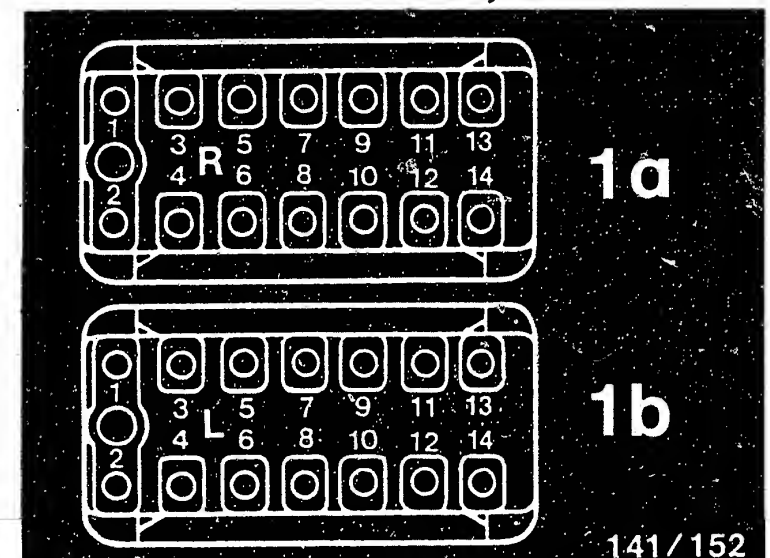
Using voltmeter on plug of heating
water valve, check socket 1 to
ground:

Reading should be: > 10 V
(Ignition on)

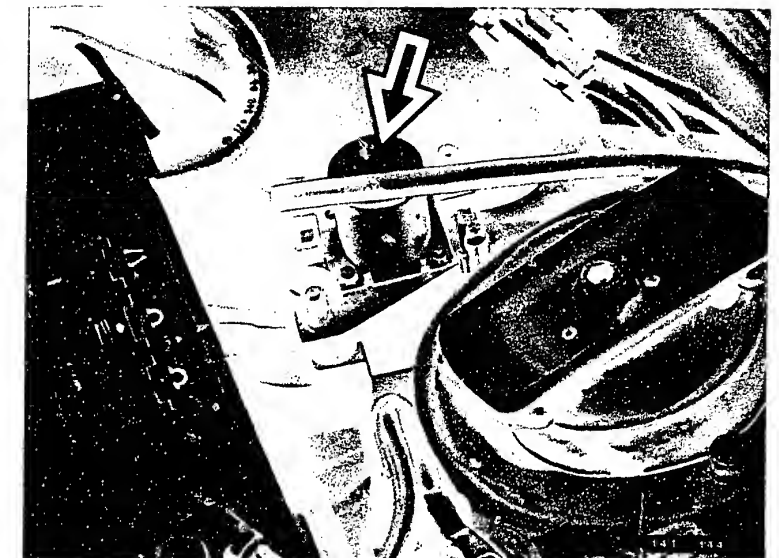
Fault rectification:

Eliminate contact resistances/open
circuits on leads.

Replace heating water valve.



1a = Control unit plug, right
1b = Control unit plug, left



Continued on next picture page

Yes

F3

Trouble-shooting

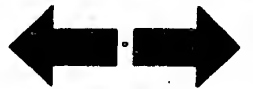
Mercedes Benz W 124



F4

Trouble-shooting

Mercedes Benz W 124



Test step 25.2:

Operation:

Position

Program switch "V"

22

Program switch "Ω"

-

Component:

Heating water valve

Measuring equipment:

Multimeter

Measuring range: 2A

Connection: Socket 1 and
socket 2

Additional operation:

Remove jumper between sockets 1 and 2 on
universal test adapter.

Temperature selector thumbwheel latched in
"min" position.

Test specification (reading):

< 1 A

Reading obtained?

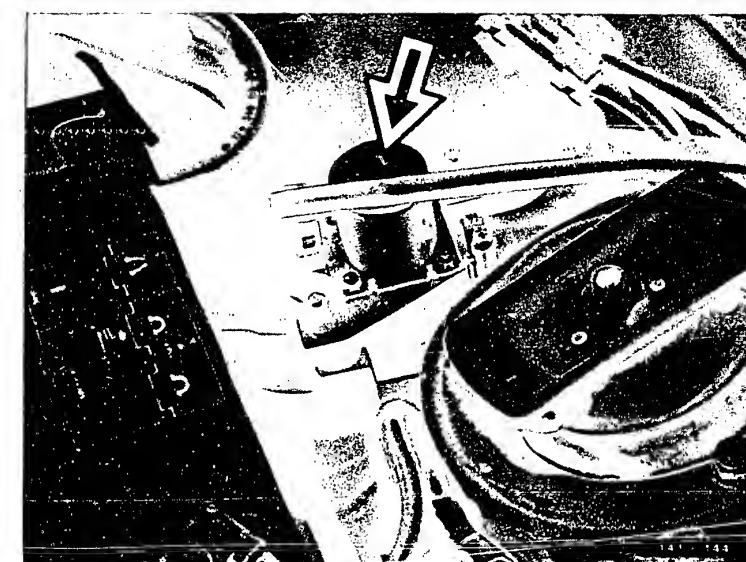
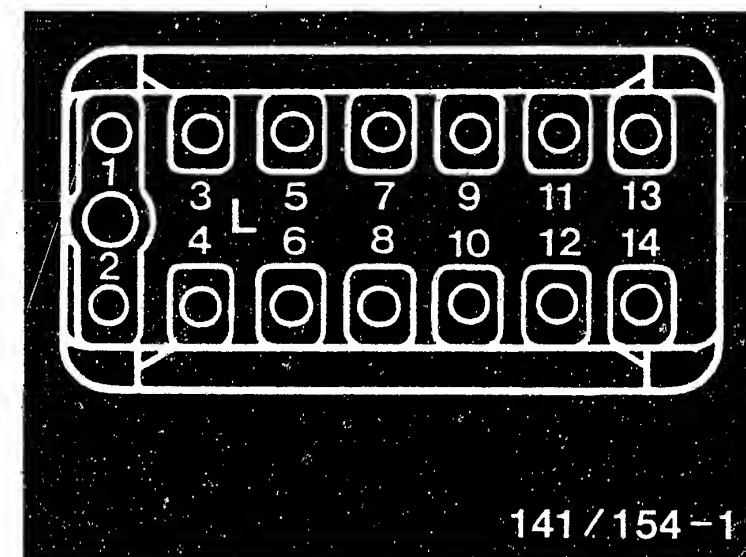
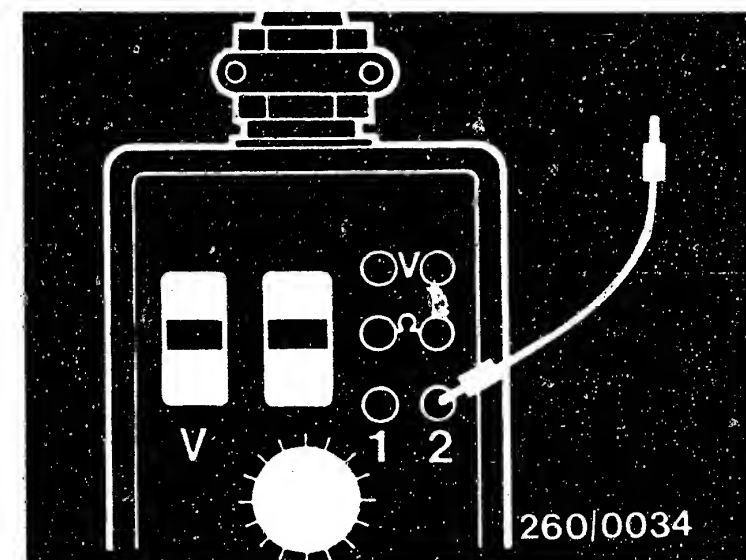
No

Malfunction:

Test specification > 1 A

Trouble-shooting:

Replace heating water valve.



Yes

Continued on next picture page

F5

Trouble-shooting

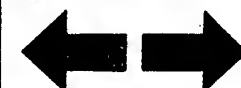
Mercedes Benz W 124



F6

Trouble-shooting

Mercedes Benz W 124



Test step 26: Re-establish jumper between sockets 1 and 2 on universal test adapter.

Operation:	Position
Program switch "V"	23
Program switch "Ω"	-

Component:
Control voltage for blower controller

Measuring equipment:
Multimeter
Measuring range: 20 V
Connection: Red (positive) and black (negative) test sockets

Additional operation:
Press blower button "AUTO".
Temperature selector thumbwheel in center position.
Press button "EC" on control panel.

Test specification (reading):
Dependent on outside temperature and passenger-compartment temperature between 1.4...4.5 V

(Wait for adaptation time).
Blower operating at medium speed.

Reading obtained?
Blower running at medium speed?

Yes

Continued on next picture page

No

Malfunction:
Test specification not within tolerance or blower motor not operating.

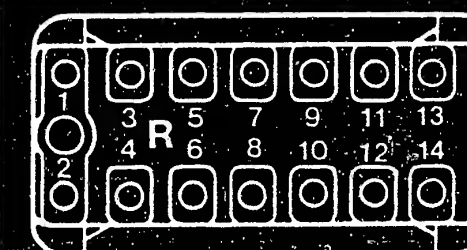
Trouble-shooting:
1. Test specification not within tolerance:
Using ohmmeter, check for continuity in lead from control unit plug (1b) socket 12 to plug of blower controller socket 3 (see top picture):

Reading should be: approx. 0 Ω

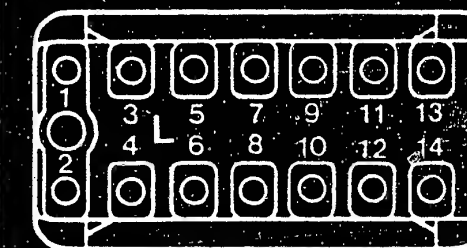
Fault rectification:
Eliminate contact resistances/open circuits on leads. If no fault can be found in wiring harness, replace automatic air conditioner control unit.

2. Test specification within tolerance and blower motor not operating:
Using voltmeter, check from plug of blower controller socket 2 to ground and socket 1 to + (term. 15):

Continued on next picture page

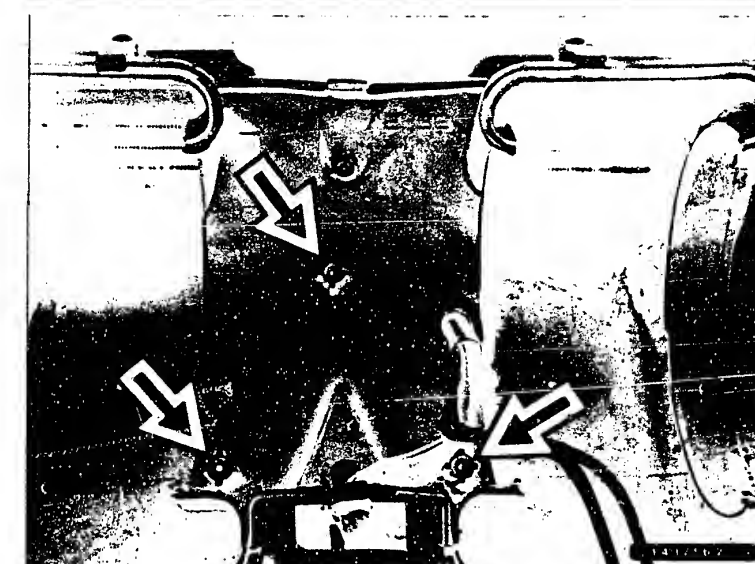


1a



1b

141/152



F7

Trouble-shooting
Mercedes Benz W 124



F8

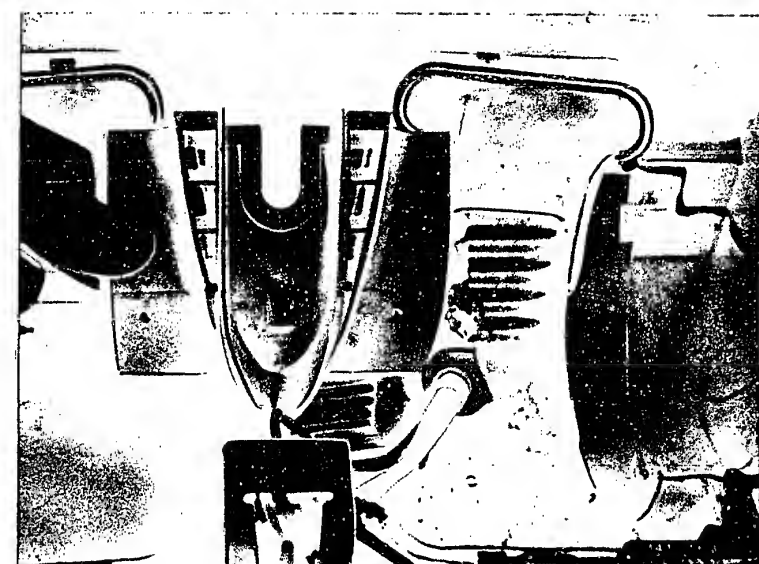
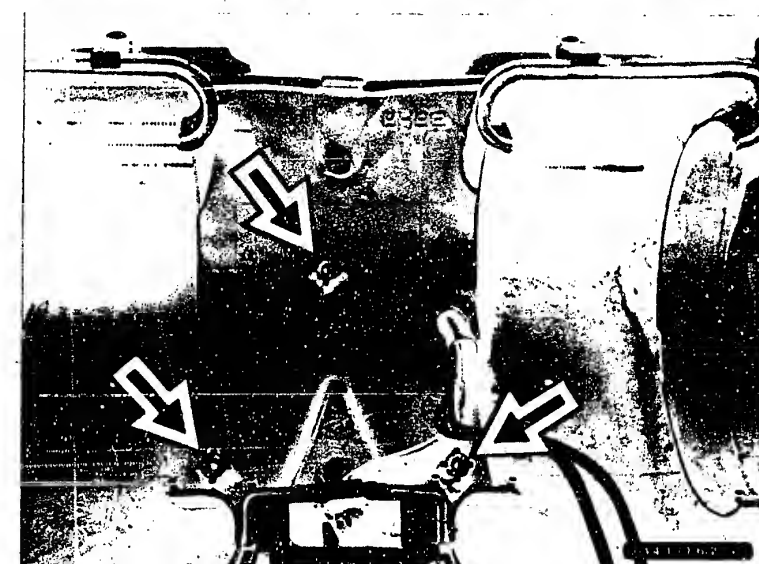
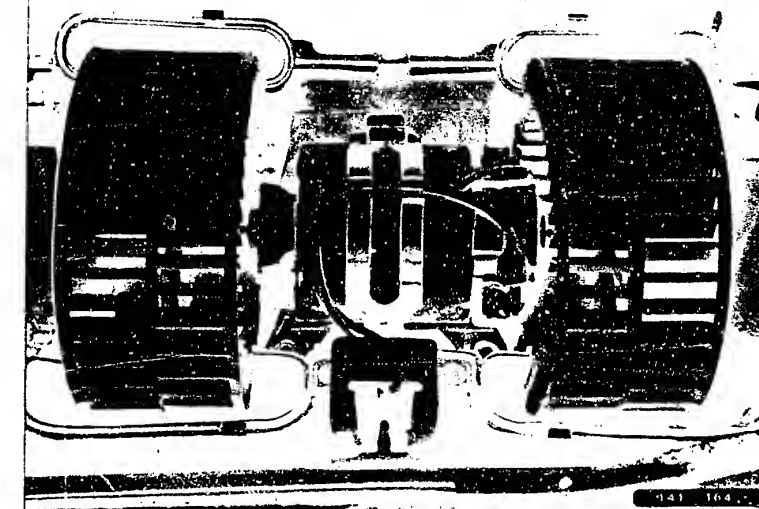
Trouble-shooting
Mercedes Benz W 124



Yes

Reading should be: approx. U_B
(ignition on)
Remove blower motor (see top
picture) and test.
If no fault can be found on the
system, blower controller is
defective; replace.
Unscrew fastening screws (see
center picture, arrows), lift off
blower slightly (see bottom picture)
and remove blower controller with
heat sink. Before mounting a new
blower controller on heat sink,
coat contact surface between heat
sink and blower controller with
thermal conduction paste
5 942 860 003.
Re-install new blower controller
with heat sink.

Note: Thermal conduction paste is
poisonous. Clean hands after
applying.



Continued on next picture page

F9

Trouble-shooting
Mercedes Benz W 124



F10

Trouble-shooting
Mercedes Benz W 124



Test step 26.1:

<u>Operation:</u>	<u>Position</u>
Program switch "V"	23
Program switch "Ω"	-

Component:
Blower controller energization

Measuring equipment:
Multimeter

Measuring range: 20 V

Connection: Red (positive) and black (negative) test sockets

Additional operation:
Press blower button "max".

Test specification (reading):

> 6 V

Blower speed increases.

Reading obtained?
Does blower speed increase?

No

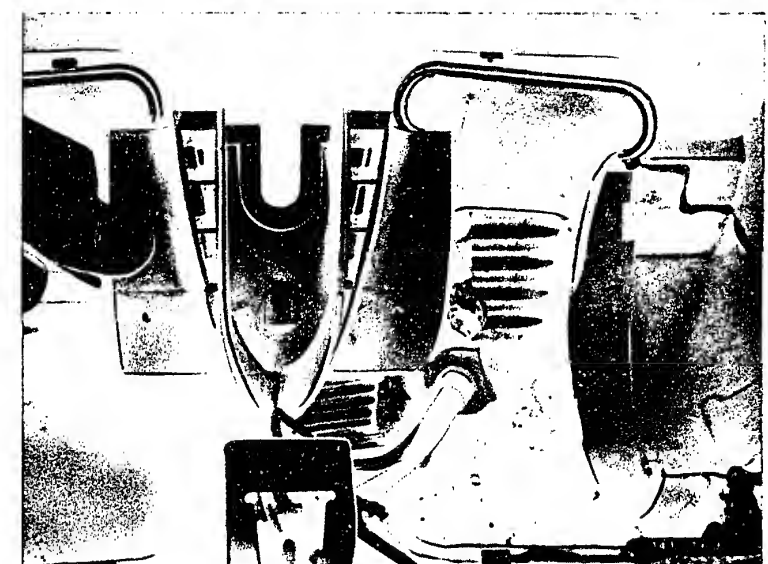
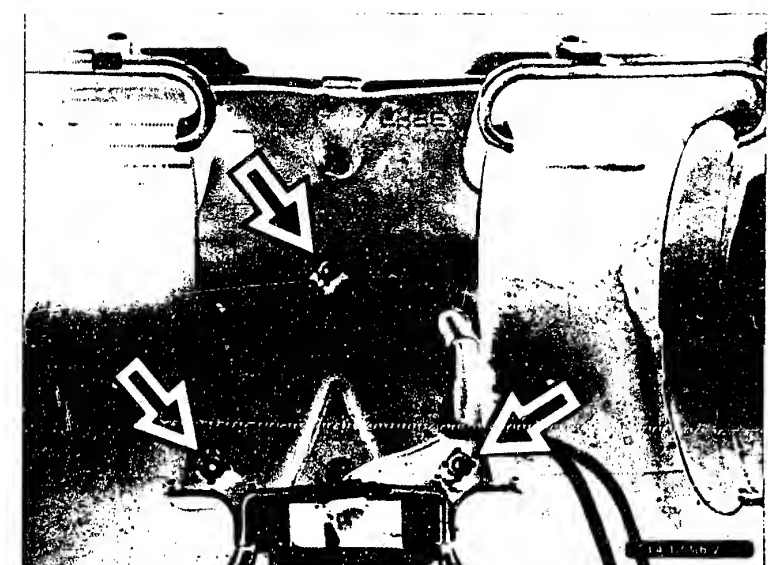
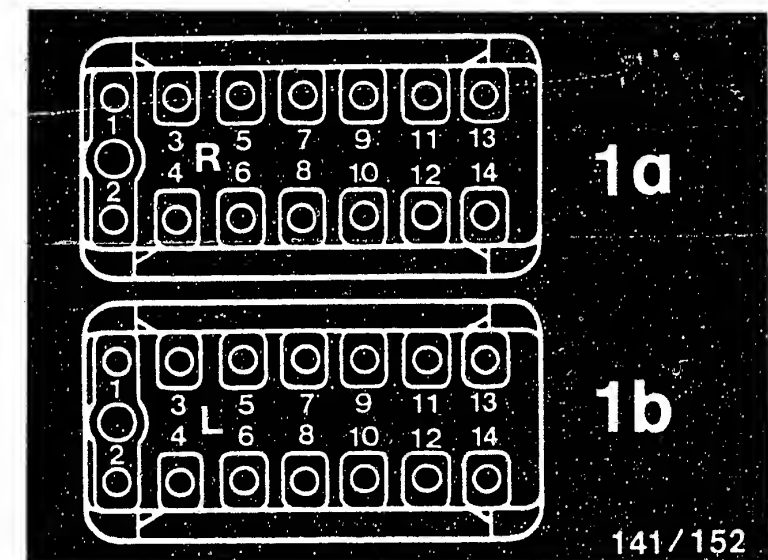
Malfunction:
Test specification < 6 V, blower speed does not increase.

Trouble-shooting:
1. Test specification not within tolerance.
Using ohmmeter, check for continuity in lead from control unit plug (1b) socket 12 to plug of blower controller socket 3 (see top picture):

Reading should be: approx. 0 Ω

Fault rectification:
Eliminate contact resistances/open circuits on leads. If no fault can be found in wiring harness, replace automatic air conditioner control unit.

2. Test specification within tolerance and blower speed does not increase:
Using voltmeter, check from plug of blower controller socket 2 to ground and socket 1 to + (term. 15):
Reading should be: approx. U_B (ignition on)
Remove blower motor (see top picture) and test.



Continued on next picture page

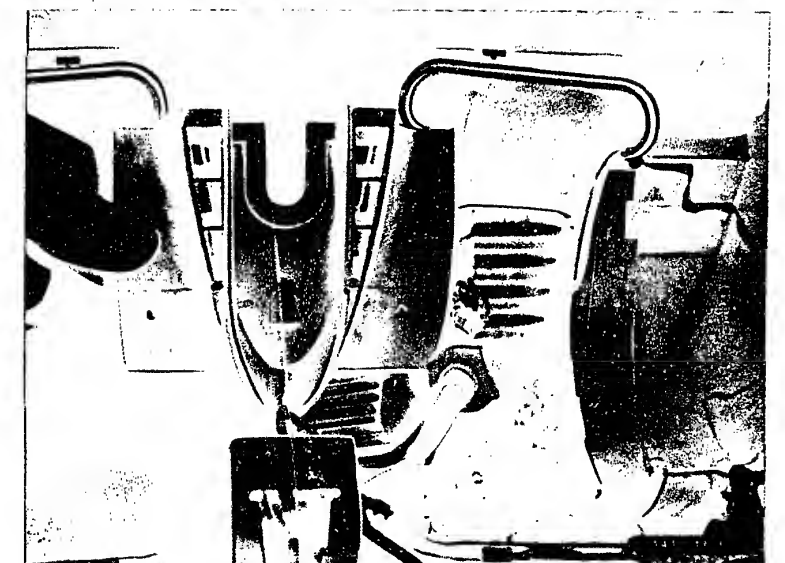
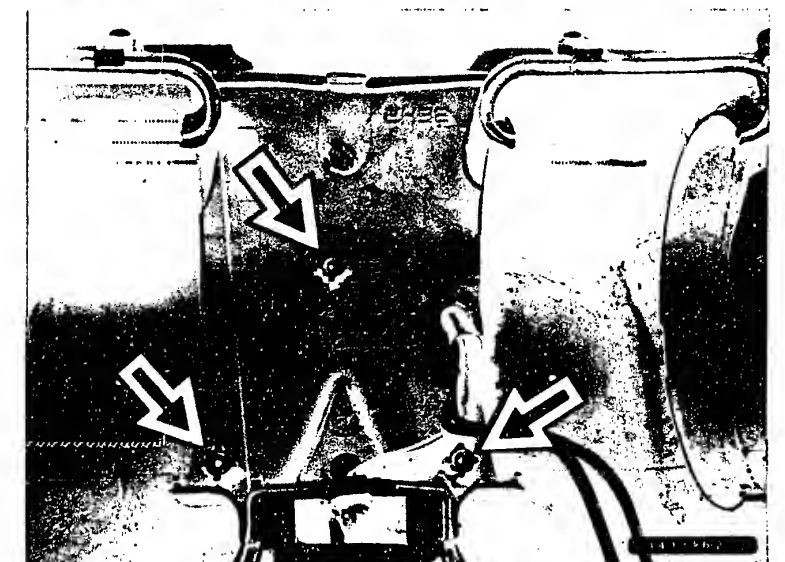
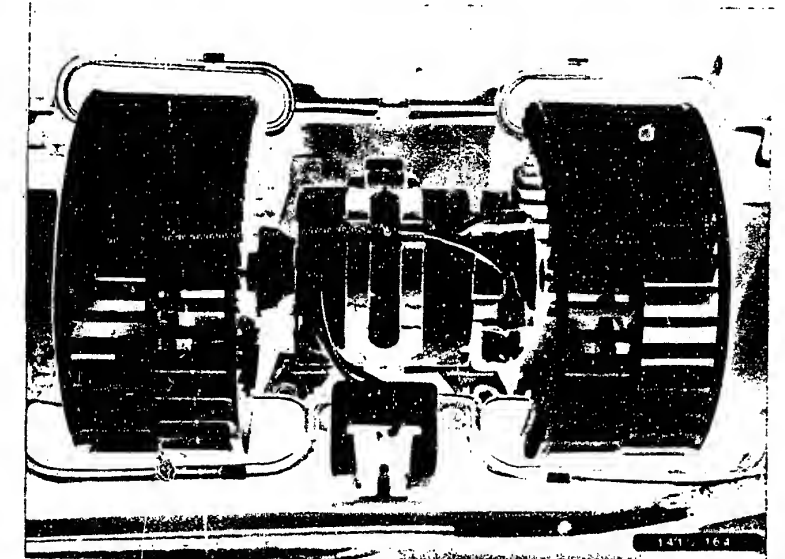
Continued on next picture page

If no fault can be found on the system, blower controller is defective; replace. Unscrew fastening screws (see center picture, arrows), lift off blower slightly (see bottom picture) and remove blower controller with heat sink. Before mounting a new blower controller on heat sink, coat contact surface between heat sink and blower controller with thermal conduction paste 5 942 860 003. Re-install new blower controller with heat sink.

Note: Thermal conduction paste is poisonous. Clean hands after applying.

Yes

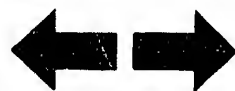
Continued on next picture page



F13

Trouble-shooting

Mercedes Benz W 124



F14

Trouble-shooting

Mercedes Benz W 124



Test step 26.2:

Operation:

Position

Program switch "V"

23

Program switch "Ω"

-

Component:

Blower controller energization

Measuring equipment:

Multimeter

Measuring range: 20 V

Connection: Red (positive) and
black (negative) test sockets

Additional operation:

Press blower button "min".

Test specification (reading):

0.9...1.1 V

Blower speed drops.

Reading within tolerance?

Does blower speed drop?

Yes

Continued on next picture page

No

Malfunction:

Test specification not within
tolerance.

Blower speed does not drop.

Trouble-shooting:

1. Test specification not within
tolerance.

Using ohmmeter, check for continuity
in lead from control unit plug (1b)
socket 12 to plug of blower
controller socket 3 (see top
picture):

Reading should be: approx. 0 Ω

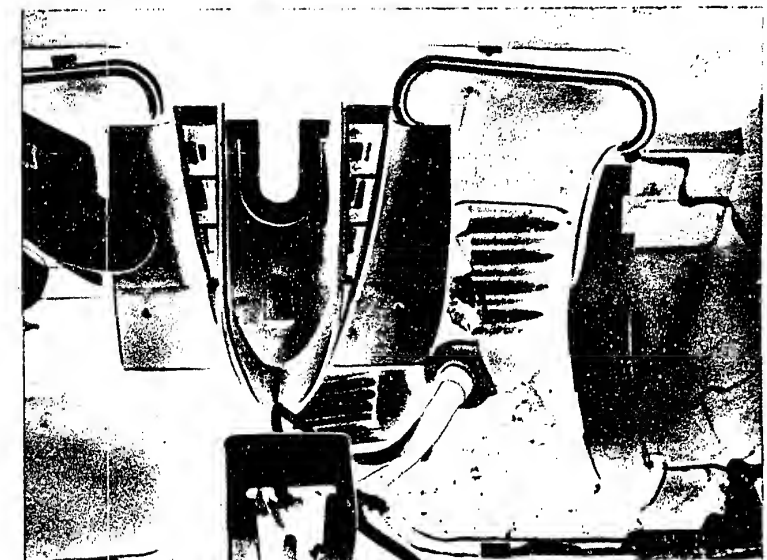
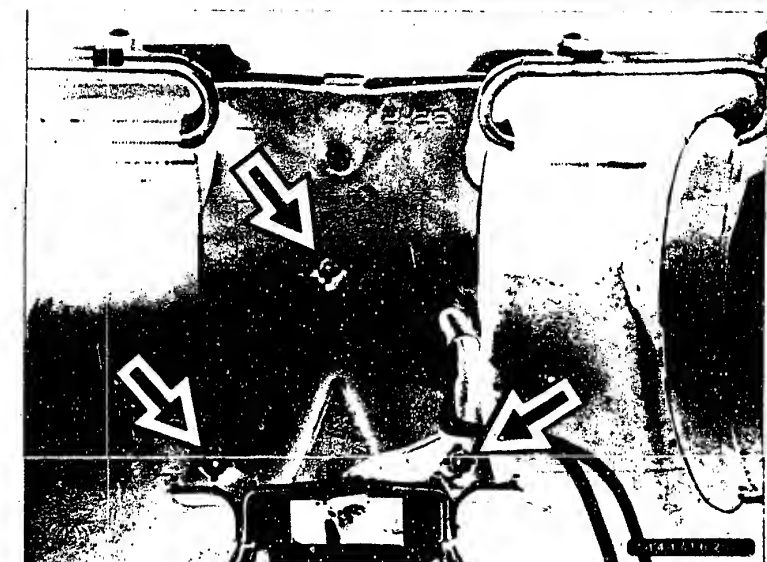
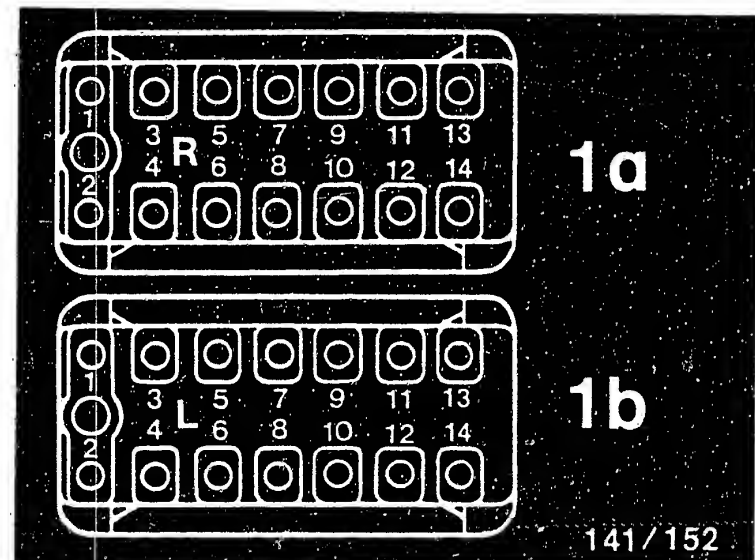
Fault rectification:

Eliminate contact resistances/open
circuits on leads. If no fault can
be found in wiring harness, replace
automatic air conditioner control
unit.

2. Test specification within
tolerance and blower speed does not
drop:

Using voltmeter, check from plug of
blower controller socket 2 to ground
and socket 1 to + (term. 15):

Continued on next picture page



F15

Trouble-shooting

Mercedes Benz W 124



F16

Trouble-shooting

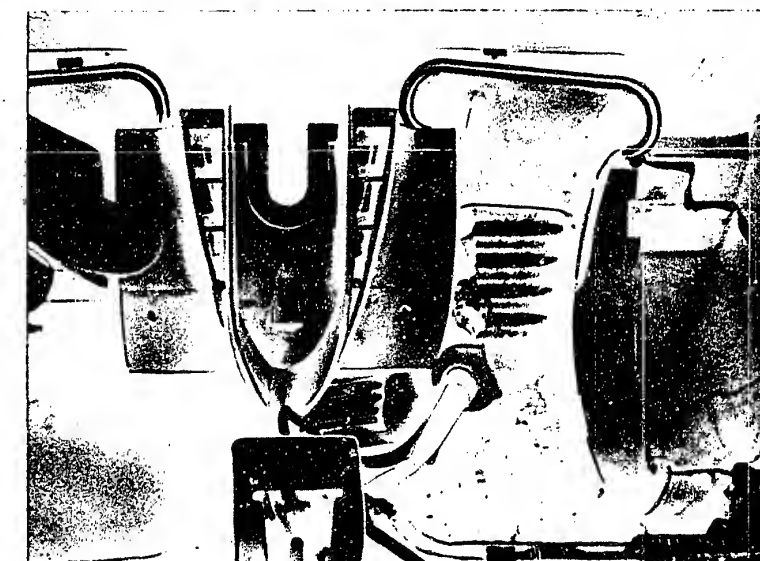
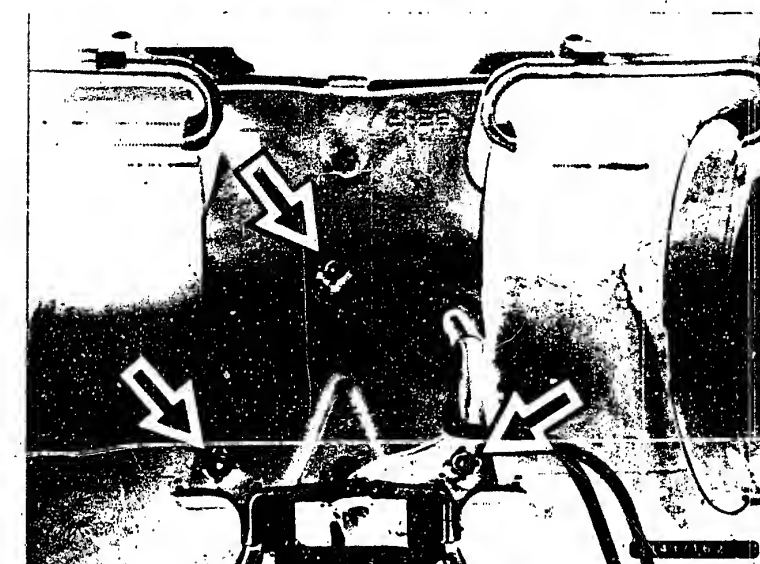
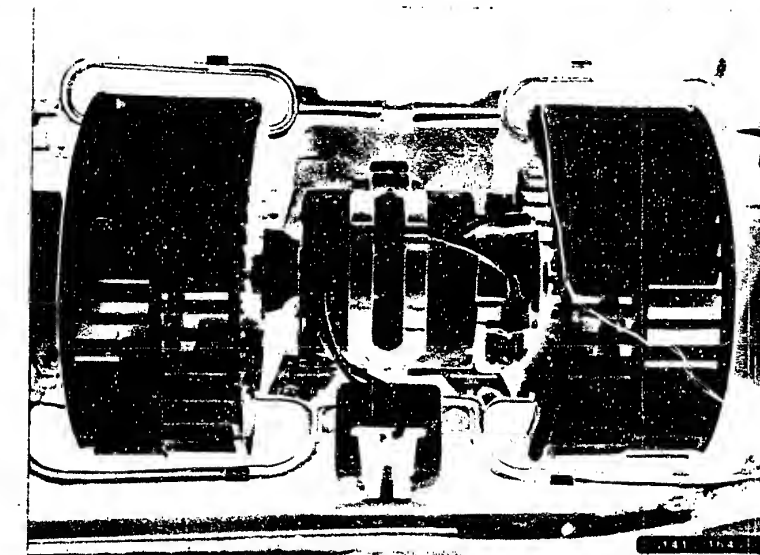
Mercedes Benz W 124



Yes

Reading should be: approx. U_B
(ignition on)
Remove blower motor (see top
picture) and test.
If no fault can be found on the
system, blower controller is
defective; replace.
Unscrew fastening screws (see
center picture, arrows), lift off
blower slightly (see bottom picture)
and remove blower controller with
heat sink. Before mounting a new
blower controller on heat sink,
coat contact surface between heat
sink and blower controller with
thermal conduction paste
5 942 860 003.
Re-install new blower controller
with heat sink.

Note: Thermal conduction paste is
poisonous. Clean hands after
applying.



Continued on next picture page

F17

Trouble-shooting

Mercedes Benz W 124



F18

Trouble-shooting

Mercedes Benz W 124



Test step 26.3:

Operation: Position

Program switch "V" 23

Program switch "Ω" -

Component:

Blower controller energization

Measuring equipment:

Multimeter

Measuring range: 5 V

Connection: Red (positive) and
Black (negative) test sockets

Additional operation:

Drive vehicle (on chassis dynamometer).

Test specification (reading):

1.1...0.9 V

Reading must decrease with increasing speed
by approx. 0.3 V per 100 km/h

Does test specification decrease with
increasing speed?

No

Malfunction

Reading does not decrease with
increasing speed.

Trouble-shooting:

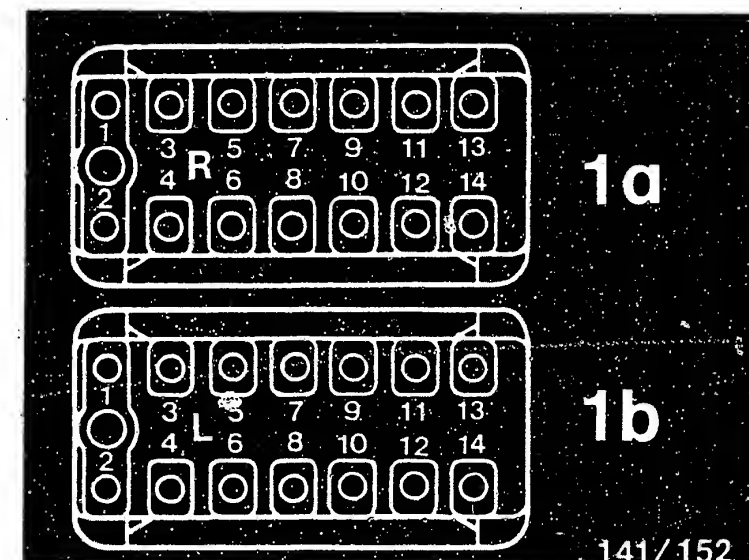
Using ohmmeter, check lead from
control unit plug socket 3 to plug
of speedometer signal generator:
Reading should be: approx. 0 Ω

Using ohmmeter on plug of speedo-
meter signal generator, check
socket 2 to ground:
Reading should be: approx. 0 Ω

Using voltmeter on plug of
speedometer signal generator, check
socket 1 to socket 2:
Reading should be approx. U_B
(ignition on).

Fault rectification:

Eliminate contact resistances/open
circuits on leads. Replace speedo-
meter signal generator. If no
fault can be found in the system,
control unit is defective; replace.



1a = Control unit plug, right
1b = Control unit plug, left

Yes

Continued on next picture page

F19

Trouble-shooting

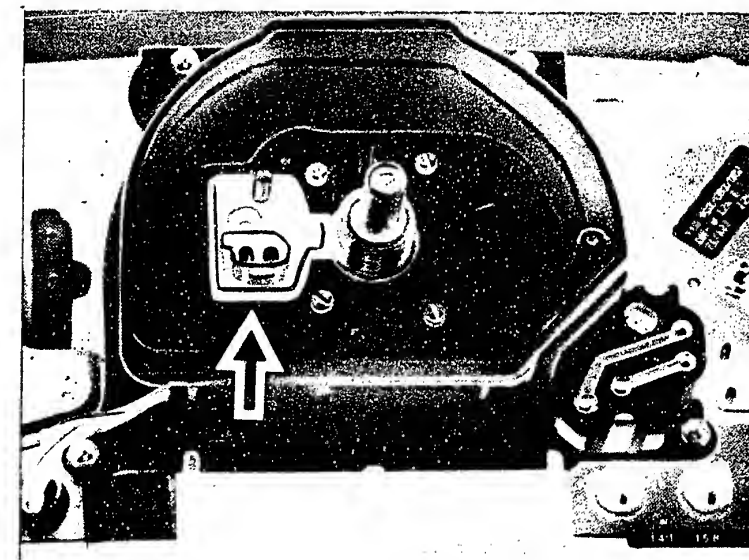
Mercedes Benz W 124



F20

Trouble-shooting

Mercedes Benz W 124



Test step 26.4:

Operation:

Program switch "V"

Position

23

Program switch "Ω"

-

Component:

Blower controller energization

Measuring equipment:

Multimeter

Measuring range: 5 V

Connection: Red (positive) and
black (negative) test sockets

Additional operation:

Press button "0" on control panel.

Test specification (reading):

approx. 0 V

Reading obtained?

No

Malfunction:

Reading not approx. 0 V

Trouble-shooting:

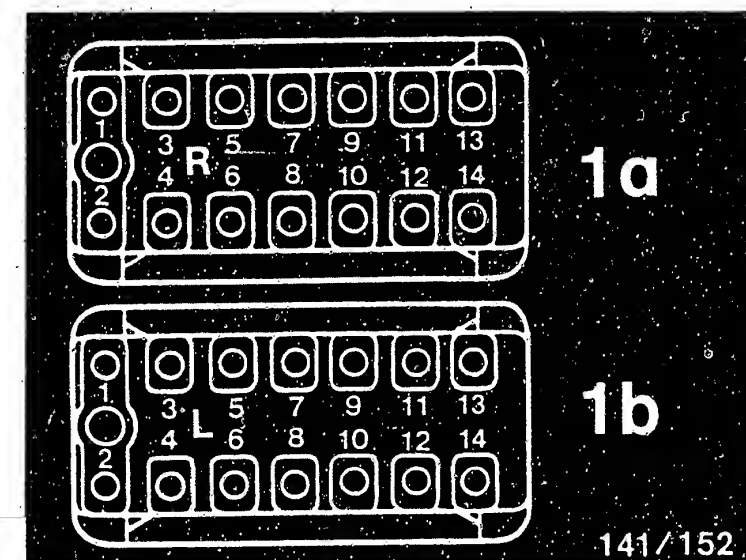
Switch off ignition.

Disconnect control unit plug;
disconnect battery.

Using ohmmeter on control unit plug,
check socket 12 to socket 13:
Reading should be: approx. $\infty\Omega$
(plug of blower controller
disconnected).

Fault rectification:

Eliminate short circuits on leads.
If no fault can be found in the
system, replace automatic air
conditioner control unit.



1a = Control unit plug, right
1b = Control unit plug, left

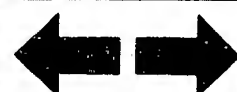
Yes

Continued on next picture page

F21

Trouble-shooting

Mercedes Benz W 124



F22

Trouble-shooting

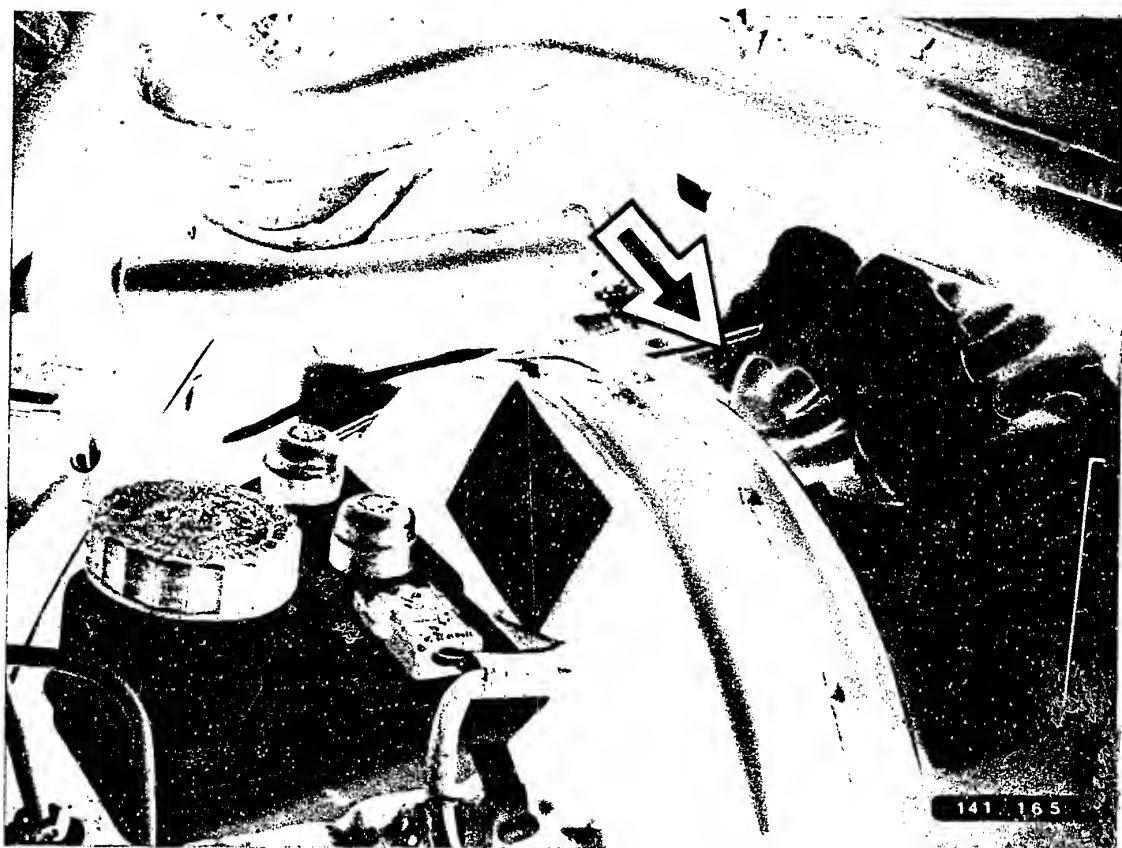
Mercedes Benz W 124



Testing with the universal test adapter is now completed.

Further possible faults may be in the vacuum system (see Coordinates F24...G4) or in the mechanicals of the automatic air conditioner.





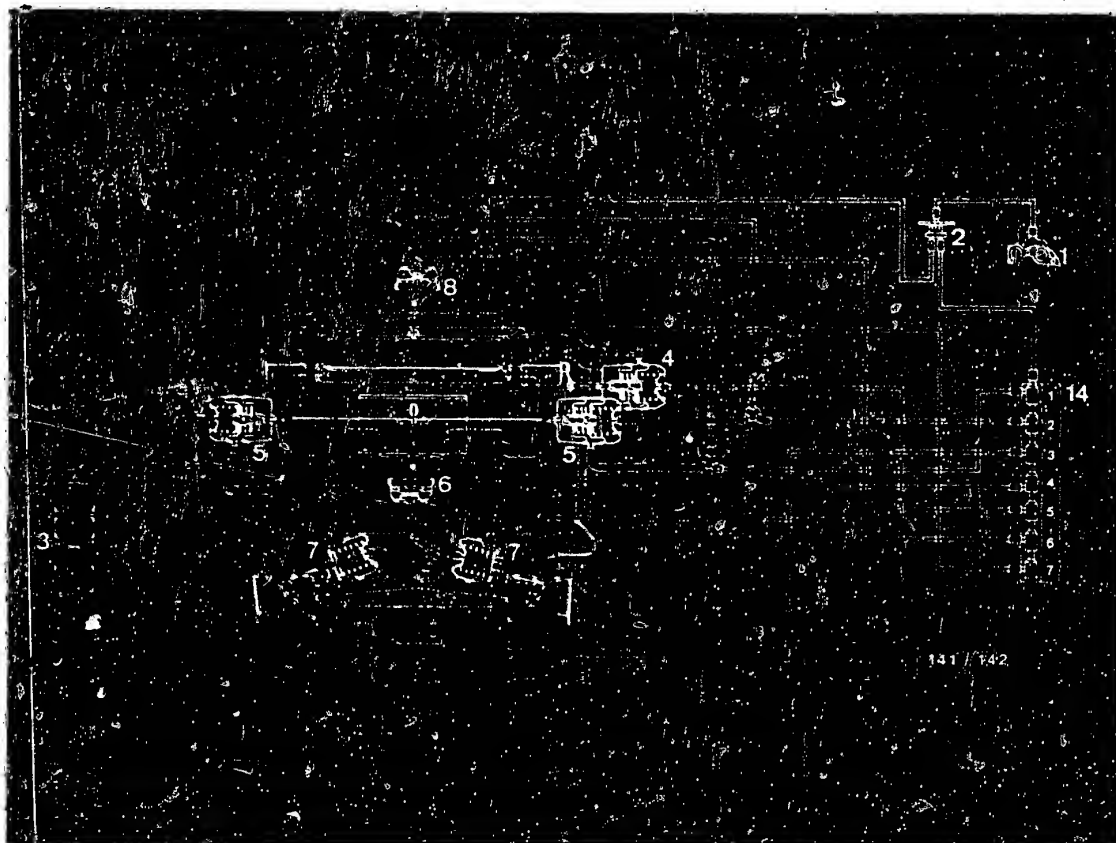
9. Checking the vacuum system for leaks

9.1 Check vacuum tank with line:

Disconnect vacuum line (red/grey, see picture, arrow) from non-return valve. Connect Mityvac pump to vacuum line. Evacuate to approx. 400 mbar with vacuum pump.

Check that no appreciable vacuum drop is detectable.





9.2 Checking the vacuum system for leaks:

9.2.1 Check change-over valve strip with line:

Disconnect vacuum line (medium green/yellow) from non-return valve 2 and connect vacuum pump to vacuum line.

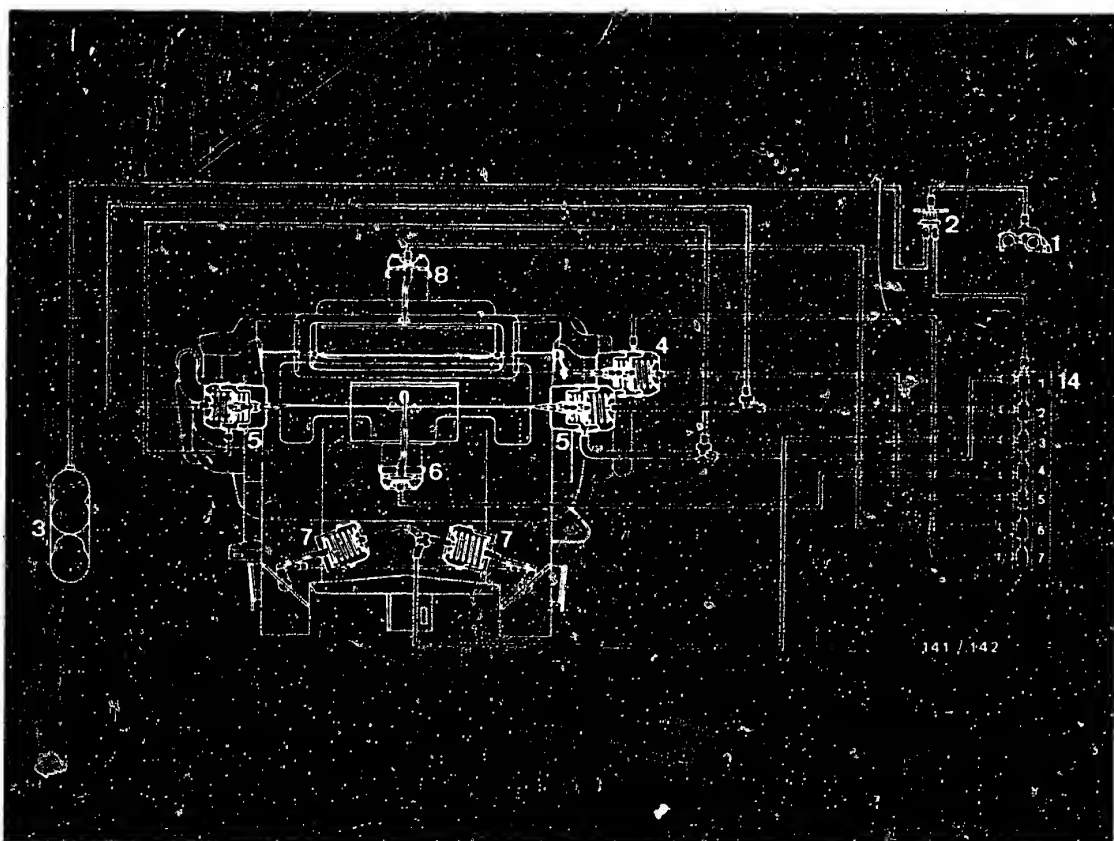
Switch on ignition.

Press DEF button on control panel.

Evacuate (approx. 400 mbar) with vacuum pump.

If appreciable pressure drop is detectable, possibly replace change-over valve strip (14) and vacuum line (medium green/yellow).

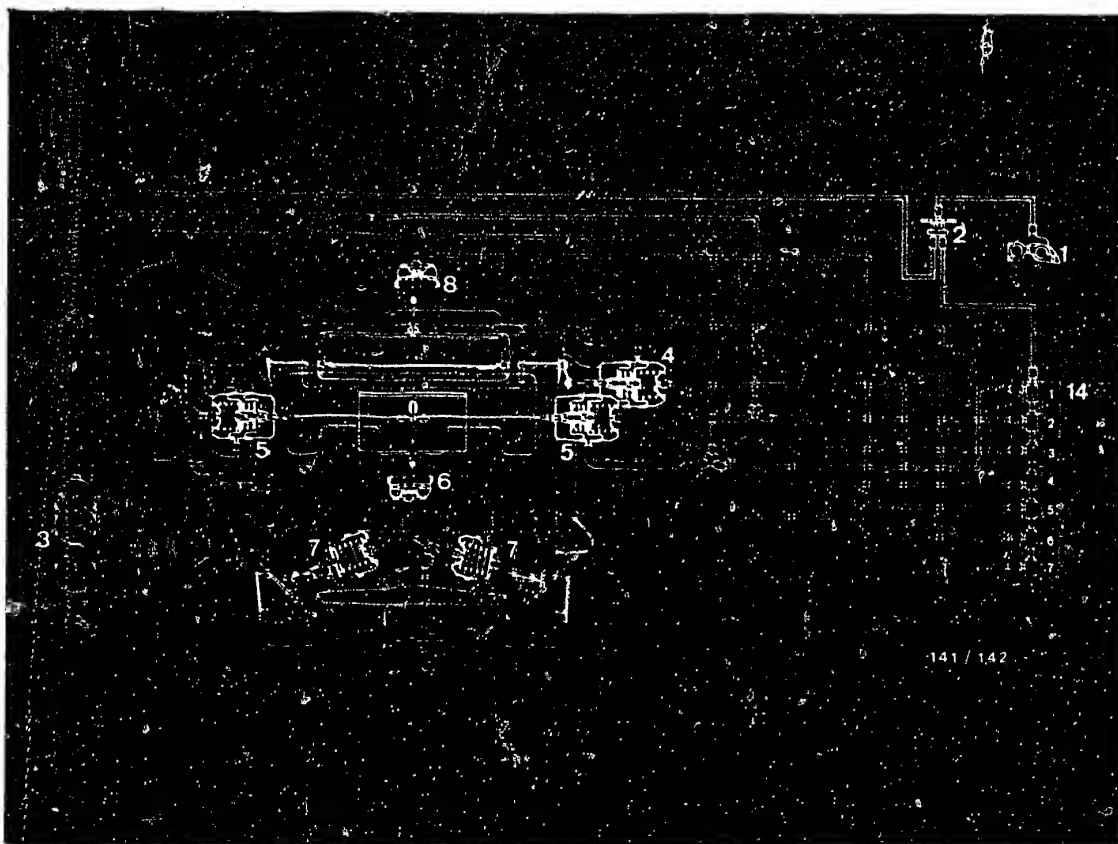




9.2.2 Check vacuum element (5) for fresh/recirculated air flap with vacuum lines:

Press button "0" on control panel and turn temperature selector thumbwheel to latched "max" position. Evacuate (approx. 400 mbar) with vacuum pump. If an appreciable vacuum drop is detectable, check vacuum elements (5) individually and replace if necessary, or check vacuum lines medium green/light blue and dark red and replace if necessary.



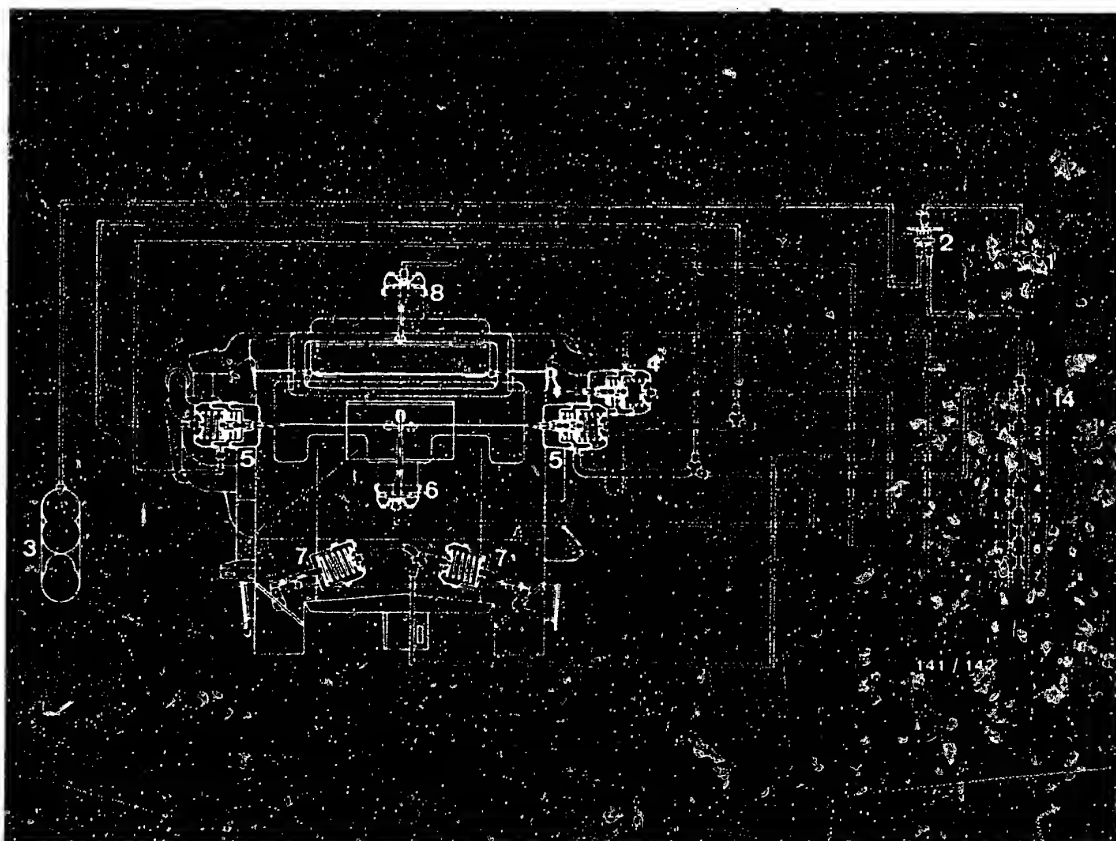


9.2.3 Check vacuum elements (7) for footwell flaps with vacuum lines:

Press button "BI-LEV" on control panel. Temperature selector thumbwheel latched in "max" position. Evacuate (approx. 400 mbar) with vacuum pump.

If appreciable vacuum drop is detectable, check vacuum element (7) individually and replace if necessary, or check vacuum line (red/yellow) and replace if necessary.





9.2.4 Check vacuum element (6) for center nozzle flap, vacuum element (8) for skimming flap and vacuum element (4) for defroster nozzle flaps with vacuum lines:

Press button "EC" on control panel and turn temperature selector thumbwheel to "min" latched position. Press blower button "min" on control panel.
Evacuate (approx. 400 mbar) with vacuum pump.

If appreciable vacuum drop is detectable, check vacuum elements (4), (6), (8) individually and replace if necessary, or check vacuum lines red/black and medium green and replace if necessary.



Table of contents

<u>Section</u>	<u>Coordinates</u>
Structure of microcard	A 1
1. Special features	A 2
2. Rapid diagnosis chart	A 2
3. Test specifications	A 15
4. Basic circuit diagram of automatic air conditioner in W 124	A 16
5. Vacuum diagram W 124	A 20
6. Test equipment and tools	A 22
7. Installation position of components	A 23
8. Trouble-shooting according to test steps	C 1
8.1 Trouble-shooting chart	C 3
8.2 Trouble-shooting according to test steps	C 7
9. Checking the vacuum system	F 24

© 1985 Robert Bosch GmbH Automotive Equipment - After-Sales Service

Department for Technical Publications KH/VDT
Postfach 50, D-7000 Stuttgart 1

Published by: After-Sales Service Department for
Training and Technology (KH/VSK). Press date: 7.1985.

Please direct questions and comments concerning the
contents to our authorized representative in your
country.

This publication is intended only for the Bosch After-Sales Service Organization, and may not be passed on to
third parties without our consent.

Microfilmed in die Federal Republic of Germany. Micro-
photographié en République Fédérale d'Allemagne.

